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These NOTES are distributed by mail to both regular and corresponding members of the NEW YORK SHELL CLUB, Inc. Dues: Full membership $3 per year, $1 for each of other members of the same family, with one copy of NOTES per family. Corresponding membership $2 per year. A limited number of back issues of the NOTES are available at 25¢ postpaid per single copy; also bulk rates. Items and articles for publication are welcomed by the NOTES and should be sent to the Editor. The Corresponding Secretary should be notified promptly of any change in your address.

The NEW YORK SHELL CLUB meets on the second Sunday of each month, September through June, in

ROOM 319, AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: SUNDAY, FEBRUARY 8, 1970, at 2:00 P. M.

PROGRAM: CONSERVATION OF THE LITTORAL ZONE OF OUR EASTERN COAST. By Mr. Derickson Bennett, Conservation Director, American Littoral Society.

VISIT TO EAST AFRICA. By Veronica Parker Johns.

A DIFFERENT NAME FOR THE RIBBED MUSSEL

By Morris K. Jacobson

One of the commonest local mollusks is the Ribbed Mussel, which is found in large numbers anchored in sandy mud of bays like Jamaica Bay, Centerport and any of the numerous inlets and bays along the north and south shores of Long Island. Its Latin name has undergone several changes even in recent years. At various times and in various books it has been called *Modiolus plicatulus* Lamarck, *Modiolus demissus* Dillwyn, *Modiolus demissus plicatulus* Lamarck, *Volsella demissa* Dillwyn and perhaps others; even, in older years, *Mytilus demissus*. In Jacobson and Emerson's THE SHELLS OF THE NEW YORK AREA (1961, p. 83) it appears, beautifully figured by D'Attilio, as *Brachidontes demissus plicatulus* Lamarck.

In the library of the Museum of Comparative Zoology in Harvard University I came across an unpublished Ph.D. theses by Dr. Vida Kenk called "A Revision of *Brachidontes*" (1966). Dr. Kenk accumulated an astounding amount of nomenclatural data, and her considered opinion, superbly documented, is that the name for our species must be *Ischadium* (pronounced, I suppose, Is - kay - dium) *demissum demissum* Dillwyn.

The name *Ischadium* was proposed by Jukes-Brown, an English malacologist, in 1905, with *Mytilus hamatus* Say (a synonym of *Mytilus recurvus* Rafinesque) as the type. Jukes-Brown wrote that he selected the name *Ischadium* because "in shape and colour the shell (of the type species) has a sufficient resemblence to a 'dried fig' to justify the appellation". Though the name was first proposed as a subgenus of *Brachidontes*, Dr. Kenk shows that both on anatomical grounds and shell characteristics, *Ischadium* should rank as a genus.

There are only two species now known to be in the genus *Ischadium*. *I. recurvum*, the Hooked Mussel, is sometimes found in New York, but the species probably does not survive our winters here. Dead shells are common near the Todd Shipyard in Hoboken where they are removed from the hulls of ships which have been anchored in Chesapeake Bay and further south.

The form of the Ribbed Mussel found in the New York area differs from the southern form, named *Ischadium demissum granosissimum* Sowerby, in having relatively smooth ribs, whereas in *granosissimum* the ribs are granular or beaded. According to Dr. Kenk, the subspecies *granosissimum* ranges from southern Florida to Galveston, Texas. The nominate subspecies *demissum* ranges from Cape Breton Island, Canada, to Lake Worth, Florida.

FRITZ HAAS

Word has reached us of the death on December 26th of Dr. Fritz Haas, until his retirement in 1968 an active staff member of The Field Museum of Natural History, Chicago.

On October 20, 1967, The Field Museum honored Dr. Haas, Curator Emeritus of Lower Invertebrates, as he began his 60th year as a publishing scientist. At that time Dr. Alan Solem wrote a review which was published as a special supplement to the Chicago Shell Club's Newsletter, and which we quote here. In it Dr. Solem told of Dr. Haas' two "lifetime" careers -- one of more than thirty years at the Natur-Museum Senckenberg in Frankfurt, Germany, and the second of "only" twenty-nine years at The Field Museum of Natural History. At that time Dr. Solem remarked: "Few people have had a distinguished career of thirty working years. We are proud and grateful that Fritz Haas' second thirty year career is being spent at The Field Museum of Natural History."

Fritz Haas published his first papers, on freshwater clams, on October 20, 1907. On October 20 of 1967 he was waiting for page proof of two long papers -- on freshwater clams. In the intervening years he had written over 275 technical articles and books; included in these papers were descriptions of 385 new species and genera of mollusks.

It was in mid-1936 that Fritz Haas, a gentle and kindly man, had to leave his job in Frankfort, the growing governmental persecution of people belonging to the Jewish faith having penetrated even into the museums. He arrived in the United States during the depression; it was only after considerable difficulties that The Field Museum was able to appoint him Curator of Lower Invertebrates on August 1, 1938.

Dr. Haas came to a museum that had never had an invertebrate zoologist, whose only mollusk collection consisted of leftover display material from the Columbian Exposition of 1893, and which lacked most of the specialized molluscan literature. With the strong backing of the administration and Museum President Stanley Field, he began to develop library and collection facilities. With only part-time student help, he reclassified and relabelled all existing invertebrate specimens, processed new collections, and by 1956 had registered 55,000 sets of shells. The library was now the finest west of the Atlantic seaboard. A linguist, with a working knowledge of twelve tongues, and after a lifetime of voracious reading, he served as a major staff resource. Since 1938, librarians and scientists depended upon him for help with European references, cryptically abbreviated locality labels, and letters for translation....

When Alan Solem was appointed Assistant Curator in 1957 it marked the first time in his working career that Dr. Haas had a full-time associate or assistant. Progressively freed from routine duties and administrative responsibilities, Fritz Haas devoted mornings to identifying and cataloguing, afternoons to research. Until he suffered a stroke in late 1965, he processed about 5,000 sets a year into the collection.

His many friends and associates mourn his passing.

(A condensation of "Museum Honors Senior Scientist" by Alan Solem; Chicago Shell Club Newsletter, December 1967.)

MORE ABOUT SLIMY MOLLUSKS

by Dorothy Raeihle

In his article "The Slimy Lives of Mollusks" (NOTES No. 157, pp. 6-7) Mr. Jacobson quotes the attitude commonly held by the uninitiated toward snails, i.e. that "they are cold and slimy and messy and simply not nice". We felt that a few more notes on the subject would be in order, a bit in defense and explanation of these handsome creatures which have been so generally maligned.

1) "Cold". Snails, not being warm-blooded animals, assume the temperature of their surroundings. As they are usually found in places sheltered from the sun (under leaves or rocks; in water and in sand) they are invariably a few degrees cooler than the temperature outside their station; the sensation of coolness is enhanced by their moisture.

2) "Slimy". We looked this up in "Webster's International" and discovered that the word "slime" dates back to the Anglo-Saxon "slīm" and is akin to the Old High German "slimen" = to make smooth, and the Old Slavic "slina" = spittle. The description, then, is apt. The glands which produce this mucous (or slime) are called mucocytes and could be compared to sweat glands. Some species have these glands in greater numbers than do others. (For details, we refer you to "The Invertebrates: Volume VI, Mollusca I", Hyman, 1967.)

3) "Messy and simply not nice". Of those species we have handled we can recall only a very few that are in this category. First among them is the limpet, Acmaea pustulata, its action not unlike that of Mr. Jacobson's Veronicella. Upon being disturbed and handled, Acmaea pustulata exudes a quantity of thick clinging mucus that is irritating to the hands and hard to scour off. Even in quiet captivity this species is best handled with a tool or gloved hand. In contrast, many species exude a minimum of mucus, seemingly just enough to give them a protective film. We have collected Siphonaria and Chitons when, having no convenient receptacle for them, we have simply placed them quickly on the back of a wet hand or forearm where they have clung, or frequently traveled around a bit, and had no noticeable deposit of mucus left on the skin. To introduce our aquarium specimens to a dubious guest we reach for a Nerita or Prunum apicinum, to let it crawl across his outstretched hand. There is always surprise that the hand is still clean. (We don't use Melongena for demonstrating, as they are rather sloppy.)

Of the species we have collected, we have found that most of the snails, when gently handled, are merely smooth to the hand -- even Aplysia. However, when under stress such as rough handling, etc., a defense mechanism may go into action, and then enough species can and do exude mucus in such quantities as to give them a very sticky reputation.

Our Natica canrena's use of its mucus was very interesting. When the snail was merely on the promenade, possible prey in the aquarium would be walked right over and left clean. When the prey was attacked by being enfolded in Natica's foot before feeding, the prey would be covered with a clinging film of mucus, almost like a package wrapped in thin plastic. Here was a demonstration of how Natica canrena

smothers its prey, and perhaps also an indication that the flow of mucus can be regulated?

Mr. Jacobson remarks that "The attacked slug exudes abundant and offensively sticky masses of slime which quickly discourage both collector and predator." True. But some people will eat anything. In "Molluscs", by A. H. Cooke in Cambridge Natural History, London, 1895, Bill Old found these paragraphs on pages 120 and 121:

"A reverend Canon of the Church of England, whose name I am not permitted to disclose, informs me that there was a belief among the youth of his native town (Pontypool, in Monmouthshire) that young slugs were 'good for consumption', and that they were so recommended by a doctor who practised in the town. The slugs selected were about 3/4 inch long, 'such as may be seen crawling on the turf of a hedgebank after a shower of rain.' They were 'placed upon the tongue without any previous preparation, and swallowed alive.' My informant himself indulged in this practice for some time, 'not on account of any gustatory pleasure it afforded, but from some vague notion that it might do him good.'

A colleague of mine at King's College tells me that he has himself frequently devoured Limax agrestis alive, but they must be swallowed, not scrunched with the teeth, or they taste somewhat bitter."

On the subject of birds feeding, or not feeding, on slugs, we find the following article by G. W. Pitchford to be most helpful. The report appeared in "The Conchologists' Newsletter" of September, 1969.

THRUSHES FEEDING ON SLUGS

On the morning 6th. June 1968, by Merryweathers Nursery, Halam Road, Southwell, I observed a thrush with a slug in its beak. The slug was probably of the genus Arion. The bird alighted onto the footpath with its prey, holding the slug by the front of the mantle. The bird proceeded to drag the slug backwards and forwards in the dust, at the side of the path, following much the same procedure I had previously observed with a blackbird feeding on Arion subfusus (Draparnaud).

When the thrush had succeeded in cleaning the slug of slime, it then picked up the slug, and beat it on the footpath, until it broke open. The bird made a meal out of the outer skin, before collecting the viscera and flying off over the road.

About a fortnight later on 19th. June 1968, in Church Lane, Thurgarton, I saw a thrush alight on the road carrying a slug in its beak; by cautious approach I was able to see the slug was a half-grown Arion ater (L.).

This bird followed the pattern of procedure previously described, after devouring the skin of the slug, the bird picked up the viscera and flew over the stone wall, to a nest of young in a yew tree on Boots' premises. The weather was very dry at this time and I think snails would have been hard to find. Thrushes seem to prefer snails to slugs.

Blackbirds devour a fair number of slugs in my garden, particularly Arion hortensis Férussac and Agriolimax reticulatus (Müller).......

Pitchford, G.W., 1954. Blackbird feeding on Arion subfuscus (Drap.) J. of C., Vol. 24, No. 1, p. 24

G. W. Pitchford

QUEENSLAND ODYSSEY

by Francis Harmon

Thursday Island and Manhattan are very different, yet there are similarities. Our home island is one of a group clustered around the mouth of the Hudson River. Thursday Island with a good anchorage is the chief trading center of The Torres Strait - an important seafaring lane between the Coral Sea to the East and the Gulf of Carpentaria to the West, separating northeastern Australia's York Peninsula from New Guinea. Situated only 11° south of the Equator, Thursday is one of an interesting group of islands visited by Captain James Cook in 1777 and charted later by Captain Bly of the Bounty. Cook named his first landing place Possession Island. A stone monument marks the spot where he planted the British flag and claimed the area for King George III while Washington fighting on Manhattan was freeing the 13 colonies from British rule.

Discovering an island almost every day, Cook named them Tuesday, Wednesday, Thursday, Friday and Sunday Islands with Prince of Wales, Hammond, Horn and Crab Islands added for good measure. Also there is Post Office Island, where mariners sailing in opposite directions picked up messages for one another and letters addressed to far away places from a dry, rocky cave which served as temporary depository.

It was in the summer of 1968 that we traveled to Queensland. To reach Thursday Island we flew from Cairns, north over Cape York Peninsula and Torres Strait, landed on Horn Island, took a bus to the ferry, then crossed on a boat carrying people, baggage, mail, and a variety of freight packages. It took longer to go from the plane's landing field to our hotel than to fly 500 miles from Cairns to Horn Island.

Our five-day visit to Thursday Island was an interesting experience. The place, shortened by its 3,000 inhabitants to "T.I.", has an impressive home office for the Harbor Master, a small post office, a bank, two churches, a 100 bed hospital well staffed with nurses and four doctors, two long piers and an assortment of shops and stores. There is no underground water and a threat to ration rain water, channeled into a reservoir above the town, reminded us of Manhattan's shortage of a few years ago.

Allie Drummond took me in his fishing boat to "Reef No. 1", where we had to remain an extra two hours until the powerful tide "flattened out", then with one cylinder working and the sail hoisted we had enough power to resist the tide which tried to take us out to sea, and we reached port safe and sound with some good shell specimens to placate a worried wife who seems to possess an uncanny ability to say "No" to trips of uncertain character. My third expedition to Crab Island with shell expert Stan Bernik was a 56 mile, day-long expedition. The fact that I brought back four "watering pots" (the rare Brechites radix) enthused my spouse. The day in sand, sun, wind and water, with a picnic lunch and a knowledgeable companion, was a pleasant one.

Waverley commented that Thursday Island has a piquant charm which sets it apart from any other place in all our travels. The fact that she acquired three of the very rare Voluta bednalli made the trip a success for her.

Cairns, August 13, 1968

Our pre-arranged "date" with the August full moon on the Great Barrier Reef a few nautical miles east of this lovely little port city was a great success! The moon, pulling the greatest tides of the year, exposed cays and reefs during most convenient daylight hours and we capitalized each day's opportunities for successful shell collecting. We visited (1) Uponu Cay; (2) Michaelmas Cay No. 1 where 10,000-15,000 terns - Anous stolidus - were nesting, hatching, feeding the young, and keeping up a ceaseless babble of screching and calling; (3) Michaelmas Cay No. 2 where nine precious and rare Voluta wisemani exposed themselves with telltale cracks in the sand and also three of the beautifully mantled Voluta caroli plus numerous Olives, Terebras, and Miters; (4) Arlington Reef (21 miles of exposed coral) half a mile wide at low tide with the foaming waters of the vast Pacific surging against the outer rampart and waiting only the turn of the tide to engulf the coast reef in nine feet of its brine; (5) Sudbury Reef and Cay; and (6) Fitzroy Island -- one of the long chain of isles between the 1,250 mile long Great Barrier and the Queensland coast, which are the exposed remnants of a submerged mountain range.

Our floating base was Roy Brooker's diesel-engined, 43' "Sea Star" which we had "chartered" for nine rather expensive but glorious and never-to-be-forgotten days and nights amid one of the great wonders of the world, comparable to our own Grand Canyon. No one should think of the Great Barrier Reef as an unbroken rampart - a sort of a Great Wall of China - 1,250 miles long. It is more correct to think of a series of hundreds of "reeferies" such as 21 mile long, ell-shaped Arlington Reef. Underwater coral formations of various shapes and sizes bridge gaps between the more formidable barriers and there are a few navigable passages.

On Arlington Reef at low tide, beneath broken coral boulders and in shallow water pools, we found a quantity of cones, "spiders", cowreys, strombs, "cat's eyes" and other interesting shells. Waverley and I had schooled ourselves to pick up live cones by the apex and to avoid, on paid of death, any contact with the anterior end from which the lance-shaped radula injects lethal poison from special poison ducts in the animal's body. So, forewarned and alert, we successfully picked up fine specimens of Conus striatus, Conus textile, and Conus marmoreus which are now en route to New York in bottles of metholated spirits along with a dozen or more varieties of non-poisonous cones.

By means of a colored 35 mm. slide, I hope to show family and friends what the underside of a detached slab of coral rock looks like when turned over with the aid of my "third leg" - an iron crowbar attached to a long hickory handle. The underside of one coral boulder may have attached to it one or two cowreys, several egg masses of mollusks, sponges, bryozoans, ascidians and algae. One such flip-over also revealed the back of a venomous Conus striatus half buried in the sand, while an octopus and a couple of brittle stars (Ophiarachnas incrassatas) lost no time in crawling away. Cardinal rules for collectors are: Use at least one glove when turning over such coral and, most important, ALWAYS RETURN IT TO ITS ORIGINAL POSITION - to avoid killing the various forms of sea life attached to the underside.

(To be continued)

JANUARY, 1970, SUPPLEMENT TO ROSTER OF NEW YORK SHELL CLUB

(Complete roster - January, 1969; Supplements: June & September 1969)

We welcome our new members and reinstatements,* and bring you to date on changes in address:

NEW MEMBERS

ASCH, Mrs. Bernard	40 Montross Street White Plains, New York 10603
FOX, Mr. Robert A.	P. O. Box 607, Grand Central Post Office New York, N. Y. 10017
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JANOWSKY, Mr. Robert	946 Ralph Ave., Brooklyn, N. Y. 11236
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LUHRS, Miss Dorothy	331 8th Street, Brooklyn, N. Y. 11215
MANDELBAUM, Mr. Seth	465 West End Avenue, New York, N. Y. 10024
NEIGER, Mrs. Antonie	300 West 108th Street,
NEIGER, David	New York, N. Y. 10025
PILLMAN, Miss Susan	328 West 12th Street, New York, N. Y. 10014
* SOHL, Mr. Paul	6 Ivy Street, Apt. 6B, Farmingdale, N. Y. 11735
VALLA, Miss Florence	440 West 45th St., New York, N. Y. 10036
WEISS, Mr. Sol	65 Harvard St., Roslyn, N. Y. 11577

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CAMPBELL, Mr. George	1717 Ala Wai Blvd., Apt. 2303 Honolulu, Hawaii 96815
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GOODFRIEND, Mr. Glenn A.	Adams Hall, Room 417, University of Rhode Island, Kingston, R. I. 02881
GREER, Mr. DuPuy	2955 Marion Avenue, Bronx, N. Y. 10458
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MAURRASSE, Mr. Florentin	567 West 187th Street, Apt. 3B New York, N. Y. 10033
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SUBIS, Mrs. Mary	64 Beverly Lane, B.H.W., Manahawkin, New Jersey 08050
WRIGHT, Rev. Calvin T.	25 Water Street, Assonet, Massachusetts 02702

CHANGES IN NAME AND ADDRESS

* CARROLL, Barbara, is now Mrs. Barbara ROUX, 35-82 160th St., 2A,
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SPIVACK, Miss Stephanie, is now Mrs. S. GERTNER, 385 East 18th Street,
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ROOM 319, AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: SUNDAY, MARCH 8, 1970, at 2:00 P. M.

PROGRAM: RARE SHELLS by Earl Reed, Senior Curator, Springfield Science Museum, Springfield, Massachusetts

SHELL-OF-THE-MONTH by George Raeihle

Derickson Bennett Speaks on
CONSERVATION OF THE LITTORAL ZONE OF OUR EASTERN COAST

Why should the littoral zone be preserved? The estuarine marshes, where fresh water and salt water meet, are the most productive areas of the ocean environment. And this is the case in the salt marshes of our East Coast estuaries. Here are the spawning and nursery grounds of 70% of the marine fishes. Here is a food supply for the small fishes -- the rich waters containing algae, diatoms, microscopic and slightly larger forms of sea life. Here also, where the waters are more shallow, is protection for the small fry from many larger predators.

Life in these estuaries depends on the health of the waters and the land surrounding them. A healthy marsh will take care of a thriving fish population which will take care of any overpopulation of mosquitoes. However, much is happening to make these waters unhealthy for fish and other marine life:

1. Channels are dredged and deepened and the sand is pumped up onto the land to make room for housing, all bordering on water recreational facilities -- as the canals thus created will be the waterways for the mass of small boats. Meanwhile, the housing discharges its sewage into the canals and, with water circulation cut off, eutrophication will set in. Eutrophication is the overproduction of an algal bloom created by the enrichment of the waters with nitrogen and phosphates from the sewage. The condition creates shade in the deeper waters causing the eventual death of all algae and therefore a reduction of life-giving nutrients for fish. But there is great pressure put on salt marshes for just such building purposes. Man considers them a challenge to his ingenuity and his use of tools. Also, much of the salt marsh is publicly owned -- and the states and local communities would like to gain some of the tax revenue available if the land is "reclaimed".

2. Industrial development makes use of low real estate prices, access to a water resource, and possibly even the use of marsh resources themselves. This is the case of a phospate plant which gains phosphates from a salt marsh, the process cheaper than that of reclaiming this mineral from sewage wastes.

3. In some areas the land is drained and used for agriculture, although the salinity of the surrounding waters limits the use to which such land can be put.

4. Sewage sludge is carried in closed barges from the sewage treatment plants of populated centers to areas outside the 3-mile limit,

but not beyond the continental shelf, and dumped into the water. This sludge will separate into three different parts: Some will float on the top and thus drift into inlets, onto beaches, and into marshes, all up and down the coast. Some of the material will sink and be carried by bottom currents, inundating the sands to a depth of five feet. Some of the material will drop to the bottom and just stay there. There are two such dumping places right off the Jersey coast, near Ambrose Light at the entrance to New York Harbor, which receive sewage sludge from the New York area; the sludge has fouled a twenty square mile area to a depth of five feet. The Army Corps of Engineers should review this problem and come to some other conclusions. These areas have no fish in them and the oxygen content of the water is very low. Alternatives to the present disposal methods are: (a) the sludge could be burned after being dried; (b) the sludge could be used as fertilizer and soil conditioner in landfill areas, to make them green again.

5. Sewer outfalls, all up and down the coast are perhaps only a few thousand feet from the beaches; the sewage gets washed up and down the coast, also polluting the estuaries.

6. Garbage as landfill. This sort of thing covers large areas of marsh, pollutes the surrounding waters, and affords unsightly views when wave action washes away the small cover of soil, or when the soil and sand cover leaches through the garbage. Such sewage and garbage pollution has destroyed a fine shellfish industry in New York Harbor.

7. Oil spillage from the numerous tankers and oil refineries in many estuarine areas pollutes the waters and makes it unsafe for wildlife, especially birds. The oil gets caught in their feathers and then they can no longer fly or dive to obtain food -- and they die. Oil globules on the sands of beaches are a nuisance to swimmers, and of course the larger spills have closed beaches in many parts of the world.

8. The removal of trees, top soil and/or sand from higher grounds allows erosion to take place; the clay, soil and sand are washed down into the marshes, inundating the rich vegetation and making dead areas in the marsh, extending the alluvial plain.

Marshes are not wasteland, but an extremely valuable resource, and should be protected from such ravages and thoughtless intrusions by man -- in order to have man benefit from them now and in the future.

(Mr. Bennett, our guest speaker February 8th, is Conservation Director of the American Littoral Society which has its headquarters at the Sandy Hook Marine Laboratories, P. O. Box 117, Highlands, New Jersey 07732. The Society started as a group of SCUBA divers doing fish watching and fish tagging, but has expanded to a membership of 2,500 with all kinds of activities having to do with ocean life and its conservation. Members are scattered all over the continent, mostly along the coasts, with many from the New York area. The Society's Annual Symposium will be held March 7 in New York City.

Mr. Bennett illustrated his talk with color slides that vividly illustrated life and death conditions in several areas of our coast.)

Mathilde P. Weingartner

NEW BOOKS AND SHELL PUBLICATIONS

by William E. Old

Among the recent literature are the following publications. Some are available locally, such as from "Seashells Unlimited" on Third Ave. Others can be obtained from the sources cited.

RARE SHELLS, by S. Peter Dance. 128 pages, 24 color plates. This is a sequel or a companion volume to Peter Dance's SHELL COLLECTING, AN ILLUSTRATED HISTORY. Some of the world's rarest shells are discussed, and fifty of them are illustrated on the color plates. As Mr. Dance states, "Some of the shells illustrated in this book are in no sense scarce any longer, and one or two are not very beautiful. But all of them are still desired." University of California Press, Berkeley, California. $17.00.

OLIVE SHELLS OF THE WORLD, by Rowland Zeigler and H. C. Porreca. 96 pages. 56 species and 101 color forms are illustrated on 13 color plates. There are also 14 black and white illustrations and drawings. Collectors can no longer shun Oliva as being "too complicated", now that a definitive work is available. Order from Richard Petit, Box 133, Ocean Drive Beach, South Carolina 29582. $12.95, postpaid in U. S. A. Size 8 1/8" x 11 1/4", cloth bound.

LA CONCHIGLIA, a new monthly shell magazine published in Rome, Italy. The text of this beautiful new magazine is in the Italian language. However, scientific names are given for each species, and the illustrations are superb. Two issues were sent to the New York Shell Club: No. 9-10 for November-December 1969 contains articles on Cypraea, Conus, and others in color, an article on Mediterranean Scaphopoda, and one on European Chitons illustrated with 12 paintings in color. No. 11, January 1970, contains articles on Cephalopoda, Tibia, Cypraea, and others in full color. Price for 12 issues, $6.00 (via air mail $2.00 extra). U. S. agent: Dr. Gordon Melvin, 863 Watertown Street, West Newton, Massachusetts 02165.

WEST COAST CHITONS, by Glenn and Laura Burghardt. 45 pages, 80 Chitons illustrated on four color plates. A Key to the identification of Chitons from the West Coast of North America. The magnificent color photo of Mopalia lowei on the cover (which is suitable for framing) is worth the price of the book. Order A GUIDE TO WEST COAST CHITONS from Glenn Burghardt, 14453 Nassau Road, San Leandro, California 94577. $4.75 postpaid.

The Family Turridae in the Indo-Pacific, Part 2, by A. W. B. Powell, INDO-PACIFIC MOLLUSCA, Vol. 2, No. 10. 212 pages. This new issue continues Dr. Powell's monographing of the Turrids. The present issue covers the family Turriculinae. There is 1 color plate, with 17 species portrayed in color, 94 black and white illustrations of specimens, plus 42 line drawings of other specimens, animals, radulae, opercula, and distributional maps. INDO-PACIFIC MOLLUSCA is published by the Department of Mollusks, Delaware Museum of Natural History, Greenville, Delaware 19807. These monographs are indispensable to the student of the Indo-Pacific molluscan fauna. $10.70 postpaid.

MARINE SHELLS OF SOUTHERN CALIFORNIA, by James H. McLean. 104 pages. This is a comprehensive study of the shell-bearing mollusks occurring along the Southern California coast. Compiled and written by Dr.

James McLean, Curator of Invertebrate Zoology at the Los Angeles County Museum of Natural History. This excellent study will serve as a companion volume to Myra Keen's "Seashells of Tropical West America". Available from Bookshop, Los Angeles County Museum of Natural History, 900 Exposition Boulevard, Los Angeles, California 90007. $2.00 plus 15¢ postage.

SHELL LIFE AND SHELL COLLECTING, by Sonia Bennett Murray. 96 pages. This is an introduction to the shell world. It contains chapters on mollusks, collecting shells, man and mollusks, and "mollusks as a business", such as "food from the sea". The book is illustrated with 38 black and white illustrations, 10 line drawings, and 66 colored illustrations. About the only glaring error I noticed was that a Haitian Tree Snail, Liguus virgineus Linné, was labeled "Florida Tree Snail, Liguus fasciatus". Sterling Publishing Company, New York. Price $4.95.

ANNOUNCEMENTS RECEIVED:

NEW YORK PALEONTOLOGICAL SOCIETY

ATTENTION! Fossil enthusiasts! The New York Paleontological Society will hold an organizational meeting on Saturday, March 21, at 1:00 PM in Room 319 of the American Museum of Natural History. All invited.

Harold S. Feinberg

WATER AND POWER AND THE FUTURE

The Inter-League Council on the Delaware and Tri-State Committee, Leagues of Women Voters, announce a joint conference on WATER AND POWER AND THE FUTURE, to be held March 11, 1970, 9:30 - 3:00, in the Oxford Room of the Hotel Piccadilly, 227 West 45th St., New York. Speakers on the program represent: U. S. Army Corps of Engineers, Delaware River Basin Commission; State, City and Federal departments of Conservation and Economic Development, Water Resources, Health, Environmental Protection, Water Pollution Control.

Registration and luncheon reservations to "Tri-State Committee, LWV" $5.65 each by March 4th. c/o Mrs. Henry Pollak, 3 Leith Place, White Plains, N. Y. 10605 (914-Wh.8-4196).

Ethel Parsons (GR7-8044)

PERCY A. MORRIS

Percy A. Morris, well-known writer of popular books on conchology, and Chief Preparator at the Yale Peabody Museum of Natural History, died on December 14, 1969, after a short illness, at New Haven, Connecticut, at the age of 70. He was born January 2, 1899, in Seymour, Connecticut. During his 41 years at Yale he curated the important A. E. Verrill U. S. Fish Commission collections. Among the ten books he authored in natural history, his best known were the "Field Guides to the Shells," published by Houghton Mifflin Co. in 1947 and 1952. He founded the Connecticut Shell Club in 1946 and was its President for 23 years. Mr. Morris is survived by his wife, nee Violet French, and by a daughter, Mrs. Marion Rasey.

THE NAUTILUS
Vol. 83 (3)

THE GRAVE OF THOMAS BLAND

Thomas Bland is without doubt one of the leading American malacologists of the second generation, Thomas Say and his contemporaries being counted as the first. He was born in England in 1809 and lived for more than 30 years in New York where he died in 1885. He had lived for a time in Barbados, Jamaica and in Columbia, and became deeply interested in West Indian land shell faunas. He wrote, for example, several important studies on the origin of the operculate land shells of America and the West Indies which still are highly useful for the zoogeographer. He worked particularly on the radula as a diagnostic organ. Upon coming to New York he took up the study of United States land shells, and collaborated with W. G. Binney in several important publications. Bland was the author of more than 70 papers, dealing with West Indian and North American land shells, their distribution and relationships.

He was buried on August 23, 1885 in the Green-Wood Cemetery in Brooklyn. Recently I decided to search out his grave. I was most courteously received by a member of the cemetery staff who looked up the pertinent data. It turned out to be grave 10899, Sec. 181, the third grave north of Geranium Path and second east of Olive Path, about 40 feet north of Sassafras Avenue. The gravestone is a marble slab, about two feet by four feet in size, and is about four inches thick. However, the slab was not standing up. It had fallen from its low pedestal and was lying on its face. The custodian assured me that this was indeed Bland's grave, even though I was unable to read the inscription.

I wrote to the superintendent of the cemetery to ask how much it would cost to set up the stone again, planning to propose to the members of the New York Shell Club that we put up the money to finance this restoration, as in my opinion such an action would lie well within the functions of our Club and should be regarded as a worthy club project. However, the prompt reply from the superintendent made this unnecessary. He wrote:

> Dear Mr. Jacobson:
>
> We appreciate your letter bringing to our attention the condition of the stone in memory of Thomas Bland.
>
> After inspecting same, we find that this was caused by vandalism.
>
> As soon as the weather permits, the stone will be reset at no expense to you.
>
> Yours very truly,
>
> Neil B. Watson

Morris K. Jacobson
Lit. cited: NAUTILUS 69:52

ANOTHER USE OF SNAIL MUCOUS!

"Dishonest dairymen manufacture 'cream' out of skim milk by squeezing into it the clear mucus of snails. The consistency of the milk becomes creamy, and a little annatto gives the yellow colour. This is a very ancient practice, but still in favour in part of England." Quoted by Julia Rogers in THE SHELL BOOK, 1906, apparently from A. H. Cooke, 1895, who quoted Lovell!

W. E. Old

QUEENSLAND ODYSSEY

by Francis Harmon

August 18, 1968

Alice in Wonderland saw many amazing things through that looking glass! But Alice should have been with us aboard Captain Tom Nielsen's trawler "Tamoi" if she really wanted a close-up of marine life! We spent two surprise-filled days with this extremely knowledgeable Australian of Norwegian descent, dredging up from the ocean floor some three tons of coral fragments, anemones, sand and mud with an unbelievable number of living creatures of every conceivable size, color and description.

The first day, operating some 20 nautical miles east of Townsville and the second day chugging a few miles south of shell-rich Magnetic Island, our net was at a depth varying from 12 to 16 fathoms. Hauled aboard about once every 90 minutes by steel cables pulled by a motorized winch, the great net would open above the waist-high bin and spill out its contents, weighing from 300 to 600 pounds. Then Waverley and myself, the Captain and his helper, Bob, would tackle the interesting job of going through everything in search for rarities to be added to our sea mail shipments to New York. A chute at each end of the six-foot bin enabled us to send over the side the unwanted material -- about 99.8% of the total. We got a liberal education on the beauty, complexity and infinite variety of marine life in the process. Captain Nielsen was equally at home in using Latin nomenclature or colloquial names for the molluscs, fish, and strange "varmints" we encountered. No pair of novices ever had a better teacher. Also, Waverley had bought and we both had read a well illustrated book by Keith Gillett titled: "The Australian Great Barrier Reef in Color" 1968, A. H. & A. W. Reed, 51 Whiting Street, Artarmon, Sydney, $3.50, pp. 112. So the 5' sea snake, the butterfly cods, the porcupine fishes, the football-sized sea cucumbers, the crabs, brittle stars, and starfishes were not unknown to us. Captain Nielsen quickly identified for us the venomous stone fish, the poisonous eels and some other vicious creatures which we shovelled down the chutes with the aid of a gloved hand and a piece of board 4" x 4".

Waverley learned too late about the poisonous type of sea urchin when she got its barbs stuck into her right hand. There was considerable swelling a day later but now she is all right after responding satisfactorily to antibiotics and ointment prescribed by a top flight doctor in Proserpine where we were guests of Mrs. Carey and the local shell club.

The multi-colored fish hauled aboard in each catch would have delighted our grandchildren. The 50 to 75 crayfish (stony lobsters) were deliciously sweet and tender. The variety of the coral fragments intrigued us and the rare shells discovered in every haul were a delight.

Two perfect specimens of Conus nielsenae came to light. These were treasure-trove indeed! The species was described by J. A. Marsh in "Australian Journal of Malacology" No. 6, 1962, and named in honor of Captain Nielsen's wife, Mollie. And to find them aboard Nielsen's ship added another pleasant element to their acquisition.

From a visual standpoint, the gems amid the soggy mass were the colorful Voluta cracenta and Voluta caroli, seemingly impervious to the muck around them and perfect in every way.

The miracles were the Murex -- troscheli and haustellum with their delicate spines unbroken. An elegant Turris grandis, "found only in the best collections" (to quote the Captain), is also on its way to a place in the glass-topped coffee table in the living room back home.

Waverley had the personal thrill of plucking from the "goo" a perfect specimen of Cypraea saulae nugata. Tony D'Attilio, Murex specialist on the staff of New York's American Museum of Natural History, will be recipient of some specimens of Murex axicornis completely camouflaged in a reddish substance; Captain Neilsen and I believe he will find them to be real "museum pieces" found alive at 15 fathoms. All such specimens were bottled in spirits for the trip to New York. The bottles were sealed, then packed in plastic bowls, also sealed, then the small bowls were placed in sealed plastic containers which were packed in fiberboard cartons. Each container was water-proofed with insulated tape. I was up most of the night preparing three cartons for shipment. I sent them via sea mail from the Townsville post office as we sped by taxi next forenoon from our motel to the airport for the 45 minute flight southward to Proserpine -- where Mrs. George Carey and her policeman-husband met us, motored us to a nice motel, came for us at 5:00 P.M. to see their splendid shell collection, entertained us at dinner, then took us to a meeting of the local shell club.

A Florida collector had written to us and to Mrs. Carey about our trip, and Mrs. Carey and I had exchanged notes -- but no member of this tripartite had ever personally met another until our visit to Proserpine....Thus do shell collectors of the world unite in mutual helpfulness.

The world neighborhood grows smaller and smaller through plane travel, TV and radio communication. While on the "Sea Star" along the Great Barrier Reef we heard the bedlam of the Republicans in Miami. Here on South Molle Island in Captain Cook's "Whit Sunday Passage", where we have enjoyed a tourist's weekend in a beach cottage and hotel with all conveniences, we read an hour ago the latest bulletin from General Eisenhower's hospital bed.

Tomorrow we are off to Yeppoon and Tin Can Bay, refreshed in body and spirit and having "the time of our lives"!

(To be continued)

AUSTRALIAN CONSERVATIONISTS, having recently won a fight to prevent the Great Barrier Reef from being mined for limestone, are now engaged in a battle against oil prospectors. The Queensland government has recently called for bids on oil-drilling rights off the Gulf of Papua and the Queensland coast. The Wildlife Preservation Society of Queensland has pointed to the disastrous effects on wildlife from oil well spillages; it has suggested that the search for oil in the vicinity of the Great Barrier Reef be restricted to slant drilling from the shore. Meanwhile, there are strong hints that the Australian government may legislate to protect the Great Barrier Reef and adjacent marine areas as a national treasure.

SEA SECRETS July-August 1969

NYSC NOTES NUMBER 160 MARCH 1970

NEW YORK SHELL CLUB INC.

FOUNDED JAN. 1949

NOTICE: NEXT MEETING A SHELL-SOCIAL APRIL 12th
SEE PAGE 1 FOR TIME, PLACE, AND PLANS

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These NOTES are distributed by mail to both regular and corresponding members of the NEW YORK SHELL CLUB, Inc. Dues: Full membership $3 per year, $1 for each of other members of the same family, with one copy of NOTES per family. Corresponding membership $2 per year. A limited number of back issues of the NOTES are available at 25¢ postpaid per single copy; also bulk rates. Items and articles for publication are welcomed by the NOTES and should be sent to the Editor. The Corresponding Secretary should be notified promptly of any change in your address.

The NEW YORK SHELL CLUB meets on the 2nd Sunday of each month, September through June, in Room 319, AMERICAN MUSEUM OF NATURAL HISTORY, with the following exception: Sunday, April 12th, 1970. Details:

NEXT MEETING: SUNDAY, APRIL 12, 1970, 1:00 P.M.
THE PLACE: BROADWAY DANCE STUDIO (Phone: AS.4-1503)
31-08 BROADWAY
ASTORIA (QUEENS), NEW YORK 11102
PROGRAM: ! ! ! ! ! ! PARTY ! ! ! ! ! !
AUCTION BARGAIN TABLE
DOOR PRIZE SHELL QUIZ
COLOR SLIDES RAFFLE
COCKTAIL HOUR PUNCH
BUFFET SUPPER - COFFEE
AND HOMEMADE CAKES BY OUR OWN PASTRY CHEFS!

Your donations are needed for the auction and bargain table. No item too large or too small -- shells, shell literature, items associated with shells or shell collecting. Bring your donations in early -- the doors open at 1:00 PM -- so that the committee can put them on display right away.

A box of west coast shells has been received from Anthony D'Attilio... Veronica Johns ("Seashells Unlimited, Inc.") is again generously donating a book to be raffled....Bill Old will conduct the Shell Quiz, and there will be a prize....Harry Lee will show color slides as he tells of his collecting in Bahia, Brazil.

Our famous pastry chefs have again volunteered to bring homemade cakes to enjoy with the coffee -- a practice we particularly appreciate and enjoy.

In order to make the party self-supporting it was voted to have a contribution at the door of $3.00 for adults, $1.50 for children of twelve years and younger. Guests will be welcome. These contributions will not cover the entire cost -- your support of the auction and sales will still be needed.

DIRECTIONS: Dorothy Jensen's BROADWAY DANCE STUDIO is on the second floor of the building, corner of 31st St. and Broadway. Coming from Manhattan: B.M.T. subway, ASTORIA line to the BROADWAY stop and you are right there. I.R.T. FLUSHING line to Queensboro Plaza, free transfer to B.M.T. ASTORIA line. From Jamaica: IND. subway to Roosevelt Ave., free transfer (take the escalator) to I.R.T. FLUSHING line, transfer again to B.M.T. ASTORIA line at Queensboro Plaza. By car: Queensboro Bridge to Northern Blvd. to 31st St., left on 31st St. (under the El) to Broadway. Or Triboro Bridge to the first exit in Queens, turn right under the El along 31st St. to Broadway. From Long Island: Grand Central Parkway to the last exit before the Triboro Bridge, a short distance along Astoria Blvd. to 31st St., turn left under the El to Broadway (about 6 blocks). Queens and Brooklyn residents should have no trouble. However, if there are any questions, you may call us at 639-2559 (Raeihle) or AS.4-1503 (Jensen).

Shells - Bargains - Prizes - Food = PARTY! See you April 12th!

EARL REED DISCUSSES RARE SHELLS

Our guest speaker at the March meeting was Mr. Earl Reed, curator of the Springfield (Massachusetts) Museum of Science. He spoke on the subject of rare shells, illustrating his observations with several dozen slides - his own photographs of shells in his personal collection.

Mr. Reed opened his talk with remarks on the flexible meaning of the term "rare". There are three categories of rarity as it applies to shells, he said. The first is biological, or actual, in number - relict species - and those that are collected in small numbers because their habitats are inaccessible.

Economic rarity is authenticated by the universally applicable law of supply and demand. There are shells whose popularity makes them hard to get, although they aren't rare in actual numbers. Popularity, in this instance, is based on appeal inherent in the species -- usually attractive appearance.

Mr. Reed's third category of rarity is plainly labelled: "Artificial". Under this heading he cites four varieties. The first is rarity brought about, or exaggerated, by popularity based on a romantic aura that surrounds the species. The classic example, of course, is Conus gloriamaris. A second variety of overstimulated demand is caused by comments offered in dealers' lists, reflecting chiefly the individual dealer's own enthusiastic opinion. A third type of artificial rarity is residual -- a situation in which the tag "rare" remains with a shell that was formerly a scarce item, but is now being found in greater numbers. And in Mr. Reed's fourth sub-category is the shell that a dealer calls rare "because he hasn't seen it before"!

. . . Milton Werner, Jr.

PUBLICATIONS:

OUR LIVING WORLD OF NATURE Series

McGraw-Hill. Ten volumes, published through the latter 1960's. Each 232 pages; $4.95 each, $33.50 for the set. The titles:

THE LIFE OF THE FOREST; J. McCormick
" SEASHORE; W. H. Amos
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" OCEAN; N. J. Berrill
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Each of the handsome, cloth-bound books in this series, produced with the cooperation of the U. S. Department of the Interior, includes over 100 color photographs, many black and white and duotone photographs, numerous maps, diagrams and drawings, appendices of specialized information, glossary, bibliography, and exhaustive index. Beautifully written and organized, they describe the plant and animal life of the respective habitats from the microscopic to the largest, treating them not only as individual species, but also as links in the food

chains. The effects of seasonal changes are explained, and in the case of habitats that are subject to an aging process, the ecological effects are detailed. The text provides fascinating reading, and the arrangement of supplemental descriptions and illustrative material makes the books in this series most useful as field guides.

. . . Milton Werner, Jr.

ARTICLES OF INTEREST:

STARFISH THREATEN PACIFIC REEFS. National Geographic, Vol. 137, No. 3, March 1970. pp. 340-352. Article and remarkable photographs by James A. Sugar reports studies and observations made in Guam, the biology, behavior and eating habits of the animals concerned (Triton, Crown of Thorns Starfish, coral).

SCAVENGERS OF THE MUD FLATS (= Nassarius vibex) Sea Frontiers,* Vol. 15, No. 4, July-August 1969. Illustrated article by Robert H. Gore, pp. 242-248

OYSTERS ARE GOING PLACES. Sea Frontiers* Vol. 16, No. 1, Jan.-Feb. 1969. Illustrated article by Jean Gilbreath Niemeier, pp. 13-19; Oyster culture in the Puget Sound area.

DEADLY SEA WASP. Sea Frontiers* Vol. 16, No. 1, Jan.-Feb. 1969. Illustrated article by John C. Trinca and Peter Schiff, Commonwealth Serum Laboratories, Melbourne, Australia, pp. 32-40. Venomous "jellyfish" periodically plaguing Queensland coast.

* SEA FRONTIERS, a publication of the International Oceanographic Foundation, 10 Rickenbacker Causeway, Virginia Key, Miami, Florida 33149

ABALONE FARMING. Skin Diver Magazine, Vol. 19, No. 2, February 1970. An interesting article by Nancy Sefton, pp. 28-29, 67, tells of the work of four men who in 1964 started to raise abalone for commercial use. Ecological station and conditions are described particularly in the area of Pigeon Point. Their discovery that six of the California abalones (Haliotis), each heretofore regarded as a pure species, will interbreed, is of much interest in scientific circles.

THE DAY THE SEA RAN OUT OF FLOUNDER. Natural History (Published by the American Museum of Natural History), March, 1970. Article by Stephen W. Hitchcock, pp. 28-31, 72-79. Ecology of marshland and shore.

SHELL DESK DIARIES

For several years the Shell Oil Company has produced, for their own use, a desk diary featuring Shells in Art, History, Nature etc. that is very popular with shell collectors. A letter from F. H. Roberts, Manager, Graphic Services, Public Affairs, Shell Oil Company, 50 W. 50th St., New York 10020, advises us of special arrangements for a limited supply of their 1971 Desk Diary to sell at the cost price of $2.50, prepaid, deadline date for the order March 31, 1970. Because of present postal situations we feel that the deadline will be extended, hopefully to at least mid-April.

Bill Old will have a number of special order forms at the April 12th Shell-Social. See him there.

OF CAPTIVE STROMBUS

At our March meeting the "Shell-of-the-Month" presentation was by George Raeihle. He showed slides and told of the *Strombus* in our aquarium, chiefly a young *Strombus costatus* brought from Jamaica, B.W.I. by NYSC member Mrs. Joseph Stout. When received in December, 1966, it was about 60 mm. high, and 30 mm. wide at the shoulder; its shell was entirely white, its proboscis appeared black. It lived in our aquarium for three years and three months.

At the time we received the *costatus*, all we had for it to feed on was mossy algae, on pebbles, collected for our Nerites. In late January, 1967, we discovered that it would feed on fine seaweed scraped from pilings and rocks. It consumed surprising quantities of this grass, one thin strand at a time, and began to put on new shell growth, tan in color and with tan periostracum; its proboscis became a dark velvety green. Eight months later it had just about completed a new whorl and measured 68 mm. high by 40 mm. wide. It continued to grow steadily for the next year -- to 85 mm. in height and 50 mm at the shoulder. From then until it died it grew only a little in width -- to 55 mm. -- but its shell thickened perceptibly.

At the end of August, 1968, we were given a second *Strombus*, a juvenile *gigas* measuring 74 mm. in height and 40 mm. (including points) at the widest part of its shoulder. It had been collected the previous June in the Netherlands Antilles by Neal and Eva Seamon. In 18 months it has grown to 100 mm. (4") in height and 70 mm. (including points) at the shoulder and is still growing. (According to field studies, this is only half the growth rate of specimens observed in natural habitat in the Virgin Islands.*)

Of the many different genus we have observed in our aquariums, only the *Strombus* has behaved in a manner that could be called responsive.

They were kept in aerated sea water, with a substrate of coral and shell sand sufficiently deep so that the operculum would not be injured by striking the floor of the aquarium. The claw-like operculum is used to dig into the sand, acting as a lever to move the animal forward in a jerky, leaping motion. The forepart, or propodium, of the foot is spatulate and has the ability to reach forward, to adhere, and to grasp by curling laterally or lengthwise.

The *Strombus* are herbivores. In collecting seaweed for them we came to learn that all the fine seaweeds were not alike. We found that those grasses that, when rubbed between thumb and forefinger, felt as if they had a fine wiry core, were rejected by the *Strombus* -- only the "soft-center" grasses were accepted. The *gigas* will feed on sea grass of slightly broader blade than the *costatus* would accept.

The eyes are well developed.** In addition to flinching when a shadow is thrown across the aquarium, our movements a few feet away, with *no* shadow thrown across the aquarium, also often trigger a flinching reaction. However, both *Strombus* became adapted so that when we tend the aquarium the flinch is only at our first approach. But in spite of the fact that there is vision, food only a few inches away is located by chemosensory perception and exploring with the proboscis.

After feeding and/or at night, each would move into a corner of the

aquarium, the anterior end of the shell firmly into the corner; the eye stalks and partially withdrawn proboscis would hang down in a fully relaxed position as if in sleep: Throwing a shadow across the eyes would cause no reaction such as when the animals had the eyes up and "awake". We feel that this "hiding in a corner" is instinctive, as so positioned among rocks and grass in its natural habitat the apertural area of the mollusk would have some protection.

After the costatus was in the aquarium for a few months, George discovered that when he carefully and lightly touched the end of its proboscis the animal, as if curious, would explore the finger tip and rasp lightly with its radula. If the finger were slowly moved away the proboscis would be extended to follow and move around the finger tip, all the while scraping with the radula. Sometimes the animal would move forward and cling to the finger tip with its foot while the proboscis explored further up the finger. Occasionally when the proboscis was touched the Strombus would extend its proboscis up and back over the shell and the animal would seem to like (and if this is anthropomorphic, so be it!) having its body and the underside of the proboscis gently stroked. The gigas when first in the aquarium was very shy; it was almost a year before George had a successful "finger response". This was patiently accomplished without the lure of food.

Experiments continue to determine if response patterns can be developed.

* "The Habits of the Queen Conch" by John E. Randall. SEA FRONTIERS, Vol. 10, No. 4, September 1964.

**"The Spider Shell's Eye" by J. H. Prince. SEA FRONTIERS, Vol. 14, No. 2, March-April 1968.

SEA FRONTIERS is a publication of the International Oceanographic Foundation, Virginia Key, Miami, Florida 33149.

. . . George and Dorothy Raeihle

SEA SAFARIS

The first official IOF "Sea Safari" has been arranged for July, 1970 — an exciting voyage to the mysterious islands of the Indian Ocean. To be sure of the best professional travel arrangements as well as top scientific experts to explain the wildlife and natural phenomena of the area, a program has been worked out with Lindblad Travel, Inc., widely known for its superbly organized expeditions ... to areas of special interest to scientists and naturalists. Further information is available on request. As other "Sea Safaris" are planned, announcements will appear in SEA SECRETS.

(The above announcement was included in the President's Message to the members of the International Oceanographic Foundation, located at Virginia Key, Miami, Florida 33149.)

P. H. TESKEY

It was with shock and sorrow that we learned of the death on March 4th of "Rip" Teskey. Our deepest sympathy is with his wife, Margaret.

QUEENSLAND ODYSSEY

by Francis Harmon

September 1, 1968

Our three day visit to Tin Can Bay was a fitting climax to the month spent in lovely Queensland, reef collecting and beachcombing. With weather like that of Florida in January and February, shells of great variety and gorgeous coloring, and scores of hospitable and knowledgeable people as our hosts and companions, we had a wonderful time from Thursday Island in Torres Strait southward the full length of the Great Barrier Reef.

Tin Can Bay was "more of the same" yet different in flavor and impact. This small fishing village on the south Queensland coast reminded us of Bay St. Louis on Mississippi's gulf coast and the vast areas of cut-over land, sandy soil and plantings of slash pine between Gympie and Tin Can Bay accentuated the similarity to south Mississippi.

This village of a few hundred people is on no airline or railroad. It has no doctor, no taxis and no supermarket. Mail comes once a day from Gympie, 35 miles inland. When it arrives the postmaster (who also operates the telephone switchboard and renders some banking services) closes the front door while he sorts the mail. By the time the door opens, 50 to 100 children and adults are lined up outside - all personally known to the postmaster who sends mail to various people by the neighbor's children and speeds delivery by nodding or shaking his head as the line moves along.

Our base was The Sleepy Lagoon Hotel where the daily rate per person for room and three meals was $6.25. The hotel bar (only liquor license in town) is the social center and does enough profitable business to keep the hotel going. The rooms were clean, the linen fresh and the spirit hospitable. We contributed spiny lobster meat (from our traveling expedition) to the bill of fare and enjoyed a feast of crab meat which Tony Anthony, the proprietor, produced for Sunday dinner. I also boiled some shells in an ancient pot on the kitchen stove, sunned the catch on the upstairs porch, packed everything in beer and whiskey cartons from the bar -- and generally made myself at home.

The big event was the night spent on Ken Poynton's trawler. Arrangements made in advance called for me to pay $30 and get all the shells while Ken and his partner got all the prawns (twice the size of our shrimp), the scallops (Amusium ballati), and the spiny lobsters.

We weighed anchor just in time as the tide ebbed around 5:00 P.M., cleared the entrance to the horseshoe bay in an hour, then chugged our way for three hours in the open sea outside a headland over 500 feet high and composed of mineral sand of fascinating colors and great commercial value. An American company has leased it and is mining titanium - a new rare metal, light in weight and great in tensile strength, now used by the aeroplane and space industries.

To windward was the vast expanse of the South Pacific "with nothing between us and far away New Zealand but wind and water" - as the skipper of our 40' trawler expressed it. Happily the wind lessened so we proceeded past Double Island Lighthouse and watched the sonar recorder to see when we "fell off" the underwater plateau and were

over the Grossi Gulch, the long narrow ravine 32 fathoms down where the rare and much sought after Volutoconus grossi (Iredale, 1927) may be found. At one end of this deep trench the coral will tear to pieces a trawling net. However, Skipper Ken was determined to take some risks. Nine other trawlers were blinking their lights and working the area. One reported over radio that one V. grossi had been found.

Our first haul around 8:30 P.M. yielded a fair number of prawns, scallops and miscellaneous fish and shells. But at midnight, after flirting with the dangerous coral, Ken brought up "the jackpot". Soon after I began sorting the catch, my eye caught the vivid red coloring of the coveted specimen and five minutes later I pulled from the pile a second V. grossi, then Ken found a third! Only 20 of this variety all year and we had three of them - as well as a good assortment of other desirable specimens.

It was at 7:00 A.M., after traveling all night, that the last netful of underwater life was spilled out into the waist-high bin on the afterdeck and, with a rubber glove on my right hand and a three pronged fork in my left hand, I began going through the wet, sticky, flopping mass searching for more shells. Then I forgot which hand to use for pulling a pile of unsorted material toward me and clasped a huge pile with the rubber glove. Wham! The catfish, almost buried in the pile, responded to my closing hand instinctively and jabbed the ball of my middle finger with its highly venomous, needle-like spine. By closing my hand I aided in driving home the spine, despite the slight protection of the rubber glove. By the time the sorting was finished I jolly well knew I had received a real "shot". Skipper Ken commented wryly as he heated some vinegar for me to dip the finger in: "Pop, you've got 3½ hours of unmitigated hell ahead of you, during which time you'll wish you could die and get it over with but you won't -- and by the time we dock the pain will be passing away." The Skipper called the turn accurately. As the poison spread, all the tendons in all the fingers began to feel paralysed. I rubbed the back of the hand, held a cup of boiling water in the palm, took a couple of pills and sweated it out!

Unknown to me, the Skipper had broadcast on his two-way radio that "the American visitor had three lovely grossi and a first class catfish jab to show for the night's trawling". All "trawler wives" and the hotel bar flies were listening, of course -- so when we docked there was Mrs. Francis Stuart Harmon, Mrs. Ann Poynton, Mrs. Molly Nugent, et al, eager to see the three Volutoconus grossi and solicitous about the wound. I had to agree that the three rare specimens were worth the cost and by the end of the day I was cleaning and packing shells with both hands.

Now we are in Sydney for a four day vacation from shell collecting, enjoying the luxuries of a modern hotel in a great metropolis of over two million people -- and wishing we were back in Tin Can Bay, where your business is everybody's business, your good fortune the talk of the town, and your "darts of outrageous fortune" a blow to be shared by all well wishers. They are real people, those fisher-folk of Tin Can Bay! We shall long remember them.

NYSC NOTES NUMBER 161 APRIL 1970

NEW YORK SHELL CLUB INC.

FOUNDED JAN. 1949

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These NOTES are distributed by mail to both regular and corresponding members of the NEW YORK SHELL CLUB, Inc. Dues: Full membership $3 per year, $1 for each of other members of the same family, with one copy of NOTES per family. Corresponding membership $2 per year. A limited number of back issues of the NOTES are available at 25¢ postpaid per single copy; also bulk rates. Items and articles for publication are welcomed by the NOTES and should be sent to the Editor. The Corresponding Secretary should be notified promptly of any change in your address.

The NEW YORK SHELL CLUB meets on the second Sunday of each month, September through June, in

ROOM 319, AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: SUNDAY, MAY 10, 1970, at 2:00 P. M.

PROGRAM: THE NEW YORK BIGHT, by Dr. Jack B. Pearce, Ecologist, Sandy Hook Marine Laboratory

ALICE TRIPS TO BAHA CALIFORNIA (color slides) by Alice Barlow

---

HIGHLIGHT

The April meeting of the Club was, once again, a social meeting. As in past years, it was held in Dorothy Jensen's Broadway Dance Studio, in Queens. Attendence was 76 and the old gag-line, "That's the spirit!" would be most appropriate in connection with every phase of the event. The program included a shell auction, a slide-talk on shelling in Brazil, a cocktail hour, and a buffet supper.

The task of the auctioneer, Bill Old, was made easy by the fine quality of the material donated by members and by the American Museum's Department of Living Invertebrates. Two members added the spice of variety by donating items of handicraft: Alice Barlow made, for the auction, matching sets of coasters and "tiles", decorated with shell photographs. Robert Remmert contributed his oil painting of a Harpa. The bidding on most items was brisk, even aggressive. Among the most noteworthy of the shells that changed hands during the hour-long sale were a Tibia fusus over ten inches long that had been donated by the Hano estate, a Melo miltonis, and several Cypraea mus. The localities represented most strongly were Bermuda and South Africa. The proceeds of the auction added up to a worthwhile boost for the Club treasury.

The dry-collecting was also good at the sale table, presided over by Harold Feinberg. The attractions there drew a crowd during every 'tween-time. For the shell-book raffle, Veronica Johns again donated a volume from the literature counter of her shop, "Seashells Unlimited, Inc.". The door prize, donated by Vice President Mart Hulswit,+ was a double one: a real Voluta hunteri and a ceramic model, several inches long, of a perambulating land snail.

The speaker of the afternoon was Dr. Harry G. Lee, a member whose work in medical research has kept him away from New York for a number of years. He traveled from Bethesda, Maryland to describe for us a collecting interval in Bahia, Brazil, and to show an excellent series of scenic and shell slides highlighted by remarkable close-ups of live specimens.

Following the program half of the meeting, the opportunity for chatting and circulating was obviously as welcome as were the punch and cocktails, and later, a fine buffet supper. Along with those individuals, literally too numerous to mention, to whom thanks are due for time, work and sale items contributed, should be mentioned those ladies who made and donated the cakes that climaxed a really spirited social meeting.

. . . Milton Werner, Jr.

+ Oops! It was Russell Jensen!

SHELLING EXPERIENCES IN BAHIA, BRASIL

by Harry G. Lee

While ostensibly engrossed in the study of tropical medicine during my last year at school, I had the well-calculated opportunity to indulge myself with some shelling. The locale was the Brasilian city of Salvador, also called Bahia after the vast bay extending to its south and west. It had been apparent that few collectors were successful in the tropical Atlantic waters of South America, so I was contemplating my quarry both as a challenge and somewhat of a novelty.

The apartment afforded me by the medical school was near several productive collecting areas, and I was fortunate in having an auto for longer jaunts. Virtually all the larger species of marine shells were to be taken within the city limits. Diving in the placid, near-pristine portions of the bay was convenient and usually rewarding. Bottom conditions varied in patches, from sand to grass to rocky, over my favorite half mile from Barra to Clube Iate (the Yacht Club). Coral was sparse, and no tendency to reef formation was evident.

Snorkeling proved an adequate means of combing the five to thirty foot depths within a few hundred yards of shore. The resemblance to underwater vistas off parts of the Bahamas and Eastern Puerto Rico was considerable. So-called "reef fish" were always around, and other familiar creatures such as spiny lobsters and morays joined in the act after I had disturbed the topography bottomside.

Shelling was productive. There was good variety, fair numbers, and an occasional "rarity". The most striking aspect of the available molluscan fauna is its resemblance to that of the more familiar northern segment of the tropical western Atlantic. With a few notable deletions and additions, my Bahia collection could be mistaken for one of West Indian or even Florida Keys shells.

Along the rocky shore of my snorkeling area, species such as *Thais rustica*, *Littorina ziczac*, and *Planaxis nucleus* paved the difficult entry into the water. Once aswim, I rarely used much effort spotting a *Pleuroploca aurantiaca* near shore despite considerable camouflaging of the shell by commensal algae. Thanks to the incredible coloration of the foot, the animal is a dead ringer for a discarded road map. The white background is netted with blood-red and occasionally dabbed with emerald. Although the shell of this species is variable with regard to color, the foot seems constant in this respect. This species is an example of an endemic form, not found in Caribbean or Floridian waters. Its northern cousin, *Pleuroploca gigantea*, did not turn up in Bahia. Similarly, the uncommon species *Vasum cassidiforme* was taken on grass flats where one would have expected *Vasum muricatum*. The former is an improvement on its northern counterpart, at least aesthetically. The parietal lip is more developed and is colored bright purple.

Cymatium, *Bursa*, *Murex*, and *Cypraea* species were perfect replicas of West Indian ones. Although only one species of *Cassis* turned up for my collection, it was a typical *tuberosa*. *Charonia variegata* was sometimes hiding in deep grottoes and, if I was lucky, a *Cypraea zebra* might be plucked in the same dive. On the other hand, as happened once, a healthy moray might be coiled against the trumpet!

Occasionally I kept dead shells for my collection and, like those of Strombus pugilis and S. gallus, and an unusual juvenile Stromb, some species were represented only in this state. People said that gigas was there, but I could find no evidence thereof. My first Xancus laevigatus was a dead specimen, but with time its habitat became apparent, and several good live examples were found. The shell was covered with a thick periostracum and often a tuft of algae on the dorsum. The tuft and a faint furrow in the bare sand often proved enough to locate an otherwise buried specimen.

Another motile but clandestine sand dweller was Oliva sayana, a species which hugs the continental shoreline from Cape Hatteras to at least Bahia while shunning the Antilles. Specimens were typically larger than Floridian ones, reaching over three inches. Olivella, Terebra, venerids, Tellina, and most moon snails found in the same habitat closely resembled northern forms. A striking endemic species found in this habitat is Prunum bullatum, which I found only dead but with good lustre. It is a giant among marginellids and resembles a short-spired Afrivoluta pringlei -- except that it could be bought at one two-thousandths the price.

Bahian shelling would not be complete without a visit to one of the local market places. Although marine molluscs don't play a great rôle in the diet of the local people, tourists can be sold certain shell novelties. For instance, Prunum bullatum, cowries and olives can be strung into necklaces and sold at inflated prices approaching fifty cents to unwitting visitors from Rio. I journeyed to the market places with great regularity not only to pick over the raw materials for jewelry but also to seek the quintessential Brasilian seashell.

I had heard from medical colleagues that "conchas grandes" were occasionally sold to the wealthier patrons of the market for use as mantel decorations. Sure enough, these ornaments were Strombus goliath, a truly rare species only "thought" to be Brasilian less than fifteen years before (JOHNSONIA I (1):14, 1941). I managed to purchase a few of the goliaths, for relatively little, during my stay. The shells ranged from juveniles with friable lips to a couple of fourteen inch adults with magnificently rolled parietal lips and ventral surfaces aglaze like chinaware. As was pointed out to me, two or more people could "hear the ocean" inside a large specimen at the same time. My attempts to learn the exact origin of my goliaths were met, not with the expected silence, but rather with such a diversity of narratives that it soon became clear that I'd need a motor launch and several weeks to run down the more credible accounts.

I don't think many people knew the locality, but something in the Brasilian psyche forbade disappointing a visitor with a shrug of incognizance. Instead, an intricate story to entertain me, at least for the moment, could do no harm. Thus a part of the Goliath Conch's biology remains an enigma even now. Sometimes more elusive to appreciation is the intrigue of Brasil and her folkways.

I feel a small sense of accomplishment in gaining a modicum of insight into both phenomena. It happened that the unusual juvenile stromb I collected while diving was goliath, so presumably the spe-

cies lives within the city limits. More important, I returned to my homeland with an improved perspective into a fascinating land and her people.

(The Port of Salvador (Bahia), Brasil lies below the eastern hump of South America at latitude 12:58 south, longitude 38:31 west. This section of the coast is swept by the southward flowing Brasil Current. ..Ed.)

AMERICAN MALACOLOGICAL UNION - 36th ANNUAL MEETING

Details and meeting outline have been received for the forthcoming meeting, to be held at Key West, Florida July 16 - 20. We remind you that you need not be a member of the AMU or of a shell club to attend.

Housing will be at the Key Wester Motor Inn and Villas, Roosevelt Boulevard on A1A, Key West (phone 305:296-5671) with a rate of $14 for either single or double occupancy. Reservations for the Key Wester must be made prior to May 10th; priority until this date will be for AMU members in good standing and invited speakers. Overflow reservations will be sent to the nearby Key Ambassador resort motel. Lecture sessions will be held in the Key Wester Convention Hall and no car will be necessary for those staying at either motel.

Please write directly to the Key Wester for accommodations. For advance meeting registration send your check covering registration fee of $7.00 per person to: Dr. G. Alan Solem, Dept. of Zoology, Field Museum of Natural History, Chicago, Illinois 60605. (Make checks payable to "G. Alan Solem" and mark it "AMU Registration Fee".) Also indicate your date of arrival and departure, and whether you wish to reserve space on the Conch Train Tour July 16 (no charge); Sand Key Boat Trip on 18th (extra charge); Annual Banquet on 20th (extra charge).

Activities will begin with an informal get-together Wednesday evening, July 15th....Both Saturday and Sunday afternoons are free for shelling a -0.6 tide, and between times shallow water marine collecting may be done at low tide across the road from the motels. The speakers listed promise an interesting program covering a variety of interests. We look forward to an excellent meeting.

WESTERN SOCIETY OF MALACOLOGISTS

The Third Annual Meeting of the Western Society of Malacologists is scheduled for June 24 to 27, 1970, at Stanford University, Stanford, California.

A symposium on advances and new techniques in molluscan taxonomy is being organized by Eugene Coan, and other topics for symposia are under consideration. Inquiries about the meeting and applications for membership should be sent to the secretary, Mrs. Paul Skoglund, 3846 East Highland Avenue, Phoenix, Arizona 85018.

NAUTILUS Vol. 83 (3)

PUBLICATIONS ANNOUNCEMENT:

1970
TAXONOMY, DISTRIBUTION, AND PHYLOGENY OF THE CYMATIID GASTROPODS ARGOBUCCINUM, FUSITRITON, MEDIARGO, AND PRIENE

by Judith Terry Smith. 134 pages, 11 plates (Bull. Amer. Paleont., v. 56, No. 254) $8.25.

Systematic revision of living and fossil cymatiid gastropods from Western North America, South America, South Africa, Australia, New Zealand. Morphologic differences are evaluated. Ecologic and distributional data are summarized.

Order from: Paleontological Research Institution, 1259 Trumansburg Road, Ithaca, New York 14850. Payment must be included with order.

SQUID REARED IN LABORATORY

One of the most important animals used in medical research -- the squid -- has been reared from the egg to adult size in aquaria for the first time by Mr. Edward T. LaRoe, a graduate student at the Rosenstiel School of Marine and Atmospheric Sciences, University of Miami. He has succeeded in rearing and maintaining alive in aquaria the fast-moving, excitable squid Sepioteuthis sepioidea, and member of the family Loliginidae. In addition, Mr. LaRoe's work has proved that at least the tropical loliginid squid grow much faster than previously believed. His squid reached maturity within five months after hatching. It had been thought that this would take three years.

Squid are used in studies of the human nervous system because they have the largest nerve fibers of any animal (over 1,000 times thicker than human nerves). The availability of fresh squid for laboratory studies has, however, always been a critical problem faced by neurological researchers. Squid generally undergo a true physiological shock when captured, and ofter suffer bodily damage by the trawls used to collect them. Once in aquaria, they tend to swim head-on into the glass in an effort to resist the unnatural physical boundaries in which they are suddenly confined.

Mr. LaRoe's work has shown that squid reared from the egg in the laboratory will adapt to aquarium conditions. It appears to be the only way in which a constant supply of squid nerve fibers can be provided to researchers on a year-round basis. The fibers must be fresh for use in neurological research, but the occurrence of squid in the sea is seasonal. Loliginids are found off the northeastern shores of the United States only during summer months. As a result, during the winter months, the major research centers from Boston and Baltimore have to send entire research teams to Chile and Peru where squid are in season. Aquarium-adapted squid are also needed by researchers who are studying behavior, learning, and memory processes. The squid's well-developed brain and eyes could be very useful here.

LaRoe noted: "I feel that my success has been largely due to the discovery of proper types of food for the young squid. I have fed them small shrimp-like animals (mysids), and by the time a squid is five days old, it will eat 50 mysids per day. By constantly studying the

behavior patters of the hatchlings, I have found certain things they prefer or like, and have adapted my rearing program to the needs of the squid."

Reprinted from SEA WINDS, in SEA SECRETS,* An Educational
Service of the INTERNATIONAL OCEANOGRAPHIC FOUNDATION
10 Rickenbacker Causeway, Virginia Key
Miami, Florida 33149.
*Volume 1, No. 1, February, 1970.

(Several years ago we found a section of a squid's egg cluster, still wet, stranded on the beach in a cove off State Channel, back of Jones Beach. It was most interesting; we could see the embryo squid turning in their individual globes. At that time we had no aquaria (nor equipment for macrophotography); our efforts to preserve it failed. We are still waiting to find another such specimen. Mr. Jacobson tells us that we are most likely to find them oceanside in the month of June. . . . . D. Raeihle)

THE JOHANNSEN COLLECTION

The 5,000-specimen shell collection of the late C. A. Johannsen, one of Canada's well known contractors, has been donated to the National Museums of Canada. It has been described by a museum scientist as "probably the finest amateur collection in Canada".

Dr. Arthur Clarke, curator of malacology for the National Museums of Natural Sciences, said "The assembly of volutes is the best I have ever seen. Our museum has only about one-third of the volutes contained in the Johannsen collection."

At present the National Museum of Natural Sciences and the National Museum of Man are closed while renovations take place to the Victoria Memorial Museum building. It is expected to open this summer.

"When the museum opens again," said Dr. Clarke, "we hope to be able to show the collection as one unit. Both the shells and Mr. Johannsen's specially made cases are ideal for display purposes."

The museum already has a collection of 2,500,000 specimens of molluscs, the largest in Canada and fifth or sixth in North America. Its Canadian collection is "by far the largest in the world" and there is a rich collection of world-wide molluscs. In spite of this, only about one-half of the Johannsen collection is represented in the museum's national collection.

C. J. Mackensie, secretary-general of the National Museums of Canada, accepted the collection from Mrs. Johannsen on behalf of the Corporation.

A condensation of the Press Release
from The National Museums of Canada,
Ottawa, Ontario, Canada.

MAY 6th: FIRST-DAY COVERS with four 6¢ U. S. stamps sponsored by The American Museum of Natural History. Send $1.00 and stamped, self-addressed 9½" envelope to "FIRST-DAY COVER", at the Museum.

NYSC NOTES NUMBER 162 MAY 1970

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FOUNDED JAN. 1949

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NEW YORK SHELL CLUB NOTES No. 162 May 1970 Page 1

The NEW YORK SHELL CLUB meets on the second Sunday of each month, September through June, in

ROOM 319, AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: SUNDAY, JUNE 14, 1970, at 2:00 P. M.

PROGRAM: SHELL SHOWS -- 1970 (with color slides)
by William E. Old

SAN FELIPE (with color slides)
by Dorothy Germer

ANNUAL ELECTIONS

DECISION ON ANNUAL FIELD TRIP

ANNOTATION TO A FOOTNOTE

Journalism is a pursuit fraught with hazards. Take that "Oops!" footnote on the report of our social meeting, page 1 of the preceding issue of this paper.

From the time I first saw that double door prize on the display table, I knew that Mart Hulswit had donated it. Because he was standing right there next to me. What more corroboration does a sharp reporter need?

I did call auctioneer Bill Old, who had chosen the door prize from the material on hand, to ask the species of the Voluta. But I did not ask him the source, because I already knew.

When the crew gathered to "get out the NOTES" two weeks later, I told Mart I hoped that the Voluta was indeed a hunteri, since Bill wasn't dead sure that he'd remembered correctly. Instead of giving a simple, direct answer Mart said, "I didn't give that shell -- or the ceramic snail."

Along with other undesirable effects, this created a pertinent question: Who had? Well, Alice Barlow seemed like a good bet, so we phoned her. Alice said no -- but she didn't leave things up in the air, as some people do. She identified Russell Jensen as having brought in a couple of the ceramic snails. What more corroboration does a sharp reporter need?

So we held Dot Raeihle's stencil up to the light and studied it for a while, trying to figure out how to make the correction. There was an old typewriter on the premises whose type-size, Dot said, was the same. But with no correction fluid on hand, the idea of sneaking in a concealed correction had to be abandoned.

To add the footnote, I climbed from cellar to attic and ran the stencil into an old Remington upright on which the NOTES were (not—Ed.) banged out many years ago. The first discovery was that it doesn't have an *. And never did. The second was that the type-size is different. It would have turned out the worst sneaky correction in the annals of journalism.

In no time, we had the corrected stencil on the Gestetner and George Raeihle was cranking out copies of page 1 of the New York Shell Club Notes and Footnote. At this point Dorothy Jensen, who had just

finished making some address plates, wandered over, attracted by the interest being given the reproduction quality of the footnote. Someone outlined the history of the problem for her, since earlier she had not been listening attentively. Whereupon, true to her show-biz background, she delivered a throw-away line with a devastating ingenuity that made us forget Lucille Ball: "Oh -- I gave the Voluta hunteri."

A fitting comment might be constructed with fragments of two older lines from the world of entertainment: "With friends like these, a reporter's lot is not a happy one." *

---

* Okay. Russell Jensen donated the ceramic model.**
Dottie Jensen (no relation) donated the Voluta hunteri.

** This statement is made without Mr. Jensen's personal confirmation, but nobody wants to hear any more about it.

. . . . Milton Werner, Jr.

BERNARD KATZ

"Ben" Katz joined the New York Shell Club in its early years, and was for a long time in regular attendance at our gatherings. Though in recent years his health had not permitted him to attend as often as wished, his interest in the club and his enthusiastic personality remained constant.

We were saddened to learn of his death, suddenly on May 16th. We join with many friends in extending our deepest sympathy to his wife, Phyllis.

THE LIVING COWRIES

by C. M. Burgess, 1970. 389 pages, 44 color plates. Published by A. S. Barnes & Co. Price $30.00.

The long promised Cypraea book, THE LIVING COWRIES, has finally been published. The book is large sized, 9" x 12", and contains superb colored photographs of all living species of Cypraea. The small species are shown enlarged several times. Collectors and students have long wished for a definitive work on this popular family, and the information in this tome will go much further toward the understanding of this group than any other 20th century illustrated handbook.

Each species is accompanied by a detailed map showing the geographical range of that species. There are introductory chapters on several pertinent subjects. A full-page drawing of the conchological characters of a cowrie was prepared by Anthony D'Attilio, and there is a foreword by Dr. Alison Kay.

Perhaps the most serious deficiency ~~only drawback~~ of the book is in the labeling of the plates. ~~On page 13,~~ 15 ~~the statement:~~ "Races, or subspecies, have not been accepted in this text", but the captions invariably are labeled with the word "Cypraea" followed by a specific name. When the entry in the text is located, one often learns that this is actually a subspecific, varietal, or form name, or in some instances, placed in synonymy of another taxon.

The captions are on the back of the plates, and no indication is given as to the page on which the description of a given shell is to be found. The photographs are well spaced on the plates, but in many cases the shells and their identifying letters are not alphabetically arranged.

The legion of collectors of cowrie shells will find this book an indispensable reference for their libraries.

. . . . William E. Old

OF SEA AND SHORE

We congratulate Tom Rice on Vol. I, No. 1 of his new publication, OF SEA AND SHORE. As Mr. Rice kindly sent a copy to all on our mailing list, we needn't review it here -- we know you enjoyed the interesting articles within the covers, all 52 pages. We're already looking forward to No. 2!

AN OVERLOOKED RECORD OF A LAND SNAIL FROM NEW YORK (Euconulus sp.)

by Morris K. Jacobson

In 1893 (NAUTILUS, vol. 7, p. 4) Dr. Victor Sterki described the variety Conulus fulvus dentatus from a series of shells sent to him by Mr. H. E. Sargent from Jackson County, Alabama. The generic name was later changed to Euconulus when it was seen that Conulus had been used earlier for a different group of shells by Rafinesque. In 1899 Dr. Henry A. Pilsbry (NAUTILUS, vol. 12, p. 116) decided that the variety belonged to the species E. chersinus rather than fulvus because it had the narrow whorls of the former rather than the more loosely coiled whorls of the latter. The variety dentatus differs from the typical chersinus because of the presence of one to three low, radial teeth forming transverse barriers on the basal wall, and appearing as white, radial stripes when the shell is viewed from the base. According to Pilsbry (LAND MOLLUSCA OF NORTH AMERICA, 1946, vol. 2, p. 242, fig. 119 d, e) dentatus ranges from Pennsylvania south to Tennessee. It is also found further west, in Arkansas and Louisiana. New York is not included in the range.

In the Museum of Comparative Zoology in Cambridge, Massachusetts, I came across a lot of three specimens of this variety (no. 61400) collected by Eber Ward Hubbard in Staten Island. Miss Mathilde Weingartner published some details about this 19th century collector, who died in 1872. (NAUTILUS, 1955, vol. 69, pp. 51-52) Hence the shells must have been collected a long time ago.

The three shells which make up the lot in the M.C.Z. are not in very good condition, but the denticles on the basal wall are clearly visible. It is gratifying to add another taxon to the generally impoverished land shell fauna of the New York City area. All specimens of Euconulus collected in our area should be examined for the presence of these small basal teeth. The two local species of Euconulus are briefly discussed in Jacobson & Emerson, SHELLS OF THE NEW YORK CITY AREA, 1961, p. 22, where they were dubbed "Beehive Snails" because of their shape, which resembles an old fashioned beehive.

THE FEEDING OF CAPTIVE ASPELLA PAUPERCULA

by Dorothy Raeihle

Over a period of ten years, on annual two-week visits to the Florida Keys, we have collected perhaps a dozen specimens of the small muricid Aspella paupercula C. B. Adams 1850. The species is uncommon intertidally and is not generally figured in popular shell books. Our specimens were identical with the illustration in Maxwell Smith's EAST COAST MARINE SHELLS (1937), Revised Edition 1951, plate 49, fig. 11, of a 1" specimen collected at Boynton, Florida. In this book it is called "Aspella obeliscus A. Adams", an early misnomer, as Aspella obeliscus is a west coast species. It was through the kindness of Dr. William K. Emerson of the American Museum of Natural History that our specimens were properly identified as Aspella paupercula, a Caribbean counterpart of A. obeliscus. *

In the early years the occasional live-taken specimen was kept in an aquarium which also held Murex (Favartia) cellulosus Conrad and various species of bivalves which served as food for the Murex. However, the Aspella did not feed on these bivalves or other experimental foods and would eventually die. It was not until about three years ago that we happened to introduce Arcopsis adamsi into an aquarium containing a few adult Murex cellulosus and one small specimen of Aspella paupercula. Arcopsis adamsi Dall is a sturdy bivalve, to perhaps ½" in length; its shell sculpture is attractive and its reddish animal interesting. Its valves close very tightly. It is long-lived in the aquarium and had been previously observed to be left alone by predators. But, in with the Aspella, there was soon an empty ark shell, then another. Although I saw the Aspella on the Arcopsis, the fact that the shell of Arcopsis and both shell and animal of Aspella are all of the same creamy white tone put close observation beyond my capabilities. The method of feeding remained a puzzle until I examined the empty ark shells through magnification. In each there was a tiny drill hole, so neatly placed at the ventral edges of the closed bivalve that each valve held half the hole. Except for a chip out of the periostracum it might have gone unnoticed.

For the past year and a half there have been four specimens of Aspella paupercula in the aquarium. The empty shells of Arcopsis adamsi have been examined carefully as they were removed from the aquarium, and in all this time the placement of the drill holes has varied in only three or four valves!

The largest of the Aspella paupercula in our shell collection is 29 mm. high and 14 mm. at the widest part of the body whorl; it is a beach specimen. The largest of the four living specimens is 19 mm. high by 9 mm. wide; the others measure 12 mm., 13 mm., and 16 mm. in height. They have not reproduced; I do not know at what size they mature. It is a small chance, but I am hopeful of finding at least one more specimen on the AMU field trip this summer, as I would certainly like to enlarge the possibility of observing their reproduction in captivity.

I am most grateful to my Florida colleagues who have made this and other aquarium observations possible by sending me natural food for certain specific feeders. Fortunately I have not had to impose on them very often, as most of the species in our marine aquaria feed readily on food obtained locally.

* For a photographic illustration of:
Aspella obeliscus A. Adams 1853, see Emerson and D'Attilio in NAUTILUS Jan. 1970, Vol. 83(3) p. 93.
Aspella paupercula C. B. Adams 1850, a West Indies specimen, see Warmke and Abbott's CARIBBEAN SEASHELLS, plate 19, fig. d.

NOTES ON CONUS MILNE-EDWARDSI, Jousseaume 1894
(Syn. C. clytospira Melvill & Standen 1899)

Roderick Cameron (1961) wrote recording a total of nine of this rare Conus known to science.

The purpose of this note is to give some data regarding another eleven specimens collected between 1965 and 1968, with two further localities -- the Porto Amelia area, Mozambique Coast, and the northern section of the coast of Zululand.

Specimen No. 10 was secured by Mr. J. Walker of Cape Town, from a trawler "Gambus", and he later disposed of the shell to Dr. Grace G. Eddison, a well-known collector of New York, in 1965.

Specimens Nos. 11, 12, 13, 14 and 15 were all obtained from the trawler "Gambus" by Mr. Darroll Smith in the same year.

Four of these were sold to a syndicate in Philadelphia, and the last (No. 15) is held by a collector resident in Johannesburg.

These six specimens are regarded as coming from the Porto Amelia area, where the French trawler "Gambus" had been operating prior to her return to France.

Between 1966 and 1968 the northern coast of Zululand was searched by skin divers who, with great difficulty, collected another five shells. The disposal of these Zululand shells is given below:-

Nos. 16, 17 and 18 are held in collections in Zululand, No. 19 was sold in the U.S.A., and the last (No. 20) held in a collection either in Natal or Zululand, is said to be badly broken.

Northern Zululand is extremely difficult of access, and the sea off the coast is very rough and dangerous. It is reported that one skin diver has been drowned off this area, and at the present time it seems dubious if any more specimens of this rare shell will be taken from the locality.

References: Cameron, Roderick (1961) Shells. Conch. Soc. of S. Africa (1969) Circular No. 109, p. 3, and Cir. No. 111, p. 6.
Dance, S. Peter (1966) Shells and Shell Collecting. (An illustrated History)
Eddison, Dr. Grace G. (1967) The Jersey Sheller, Vol. 2, No. 1, p. 27. "Glory of India" Cone.
Editor, Hawaiian Shell News, 1966, Vol. 14, No. 5.
Smith, Darroll (1965) Hawaiian Shell News, Vol. 14, No. 6 (Dec.)

D. H. Kennelly,
Conchologist, East London Museum, South Africa

Reprinted from THE CONCHOLOGISTS' NEWSLETTER No. 32, March 1970 ---
(Produced by THE CONCHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND)

SECOND THOUGHTS ON "STATE SHELLS"

A few years ago a sincere group of shell students suggested that, as States have "State birds" and "State flowers", why should they not have a "State shell"? The idea was to have it officially recognized that here also, in the coastal seas, was a unique form of the area's wildlife. The idea spread to other groups and was presented in these NOTES No. 157, pp. 3-4.

In the TEXAS CONCHOLOGIST of March, 1970, there is a thoughtful article concerning these current proposals and the boomeranging results of the sudden popularity of a species.

The first species to be declared a "State shell" was Phalium granulatum Born, the Scotch Bonnet, which though it is not confined to the Carolina coast was particularly well suited as a candidate for the honor of being selected as the "North Carolina State Shell".

The writer reports that its unanticipated popularity as simply a souvenir shell, rather than its recognition as a form of North Carolina's wildlife, has resulted in the exhaustion of the local supply, and that the species is being madly collected in other areas to be brought in to satisfy the commercial demand for "the North Carolina State Shell".

The article notes that the results of overpopularity of a particular species are well known in commercial circles. We have protective laws (re: size and quantity limits, seasonal restrictions), strictly enforced, concerning food species -- oysters, clams, scallops, abalones, etc. It has been found necessary to protect these mollusks, though they propagate in millions, in the attempt to guard a food supply for man. What chance does a unique local species have against thorough decimation by sophisticated methods of commercial collecting? None. We quote directly from the article:

"...If we as Shell Club members are truly concerned with the welfare of these animals we find so fascinating, we can hardly promote the creation of a State shell unless we also promote a bill that would simultaneously provide the same kind of protection that favors our State Flower and State Bird. (i.e.:) 1. NO collecting. 2. NO commercial exploitation. Anything less than these two provisions would be impossible to police, and probably worthless as protection for the species.

So thinking carefully of all the implications of promoting a State shell, perhaps the Shell Clubs should be the last groups to urge such exploitation of a molluscan species. After all, is a State shell REALLY NECESSARY? IS IT TRULY ANYTHING MORE THAN A PROMOTIONAL GIMMICK? ..... "

TEXAS CONCHOLOGIST, Vol. VI, No. 7, pp. 75-77. (Summarized by D. Raeihle.)

NATURAL HISTORY FEATURED ON U. S. POSTAGE STAMPS (6¢)

The newly issued commemorative stamps, sponsored by the American Museum of Natural History, carry no legend. But visitors to our Museum will immediately recognize the Haida canoe in the 77th St. foyer, the towering elephants in Akeley Hall, and the Eagle in the Hall of North American Birds. The prehistoric mural is in the Peabody Museum, Yale.

NYSC NOTES NUMBER 163 JUNE-JULY-AUGUST 1970

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These NOTES are distributed by mail to both regular and corresponding members of the NEW YORK SHELL CLUB, Inc. Dues: Full membership $3 per year, $1 for each of other members of the same family, with one copy of NOTES per family. Corresponding membership $2 per year. A limited number of back issues of the NOTES are available at 25¢ postpaid per single copy; also bulk rates. Items and articles for publication are welcomed by the NOTES and should be sent to the Editor. The Corresponding Secretary should be notified promptly of any change in your address.

The NEW YORK SHELL CLUB meets on the second Sunday of each month, September through June, in

ROOM 319, AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: SUNDAY, SEPTEMBER 13, 1970, at 2:00 P. M.

PROGRAM: ALICE WANDERS AGAIN (with color slides)
By Alice Barlow

SUMMER HAPPENINGS:
Tidewater Shell Show - by W. E. Old
Reports on AMU Meeting in Key West
By members (with color slides)

ANNUAL ELECTIONS

At our June meeting Past President Mansfield Fuldner was spokesman for the Club as he congratulated our retiring President Milton Werner, Jr., with many thanks to him and the staff who served with him. During his two years as president we have had many instructive speakers and always full and interesting programs.

We then welcomed Mart Hulswit as our new president, and William S. Murphy as vice-president. Both are active and sincerely interested members; we look forward to the coming season under their administration. They will be aided by the present staff who agreed to serve still further in their offices: Treasurer, Mathilde P. Weingartner; Corresponding Secretary, Dorothy Jensen; Recording Secretary, Angela Savino; Historian, Nick Katsaras.

The members were unanimous in their thanks for past services and approval of the current slate.

ANNUAL FIELD TRIP & OUTING JUNE 27th

It rained. We have no further report.

4th EUROPEAN MALACOLOGICAL CONGRESS

The fourth Congress of Unitas Malacologica Europaea shall take place in Geneva from the 7th to the 11th of September 1971. It shall be preceded by a one-day meeting of museum curators in charge of Molluscs, to enable them to discuss their problems and the means of putting their collections to the best possible use for the scientific community.

Sessions will take place in the new Museum of Natural History and if necessary also in the University building. Meeting rooms shall be provided for discussions at the Museum during daytime and at the Student's Hostel in the evenings.

Those wishing to contribute papers should send full information (a form is available) no later than September 30, 1970, to:

IVme Congrès de Malacologues Européens
Muséum d'Histoire naturelle
CH-1211 Genève 6

All Malacologists are cordially invited to attend.

A STUDY ON USING ARTIFICIAL REEFS IN FISH CONSERVATION

Dr. Jack Pearce, of the Sandy Hook Marine Laboratory, our guest speaker in May, spoke on the ecological effects of the dumping of treated sewage in the waters of the New York bight, describing the increasingly large area in which no life survives. He has since provided us with material describing an experiment, in which he and other laboratory biologists are engaged, being made in the hope of countering the effects of pollution on populations of useful fishes and other marine forms.

Destruction and pollution of estuarine environments, and pollution of shallow, coastal waters, is depriving marine fishes of spawning and nursery grounds, and is killing both juveniles and adults of inshore fishes and crustaceans. The conservationists hope to rebuild populations of these species by perfecting the charter fishermen's technique of establishing artificial reefs. On an otherwise flat bottom, such objects as automobile bodies, tires and discarded construction materials attract free-swimming species. The attraction grows stronger when colonies of plant and animal life, including amphipods, worms, barnacles, and especially mussels, grow on the "reef", providing a source of food. On the other hand, colonization by stinging hydroids and some sponges has a repelling effect. Reefs also promote the survival of juveniles by serving as shelter against natural predation.

The present study, with stations at various latitudes along the east coast, is designed to generate data that will indicate which materials serve most effectively, the best time of year for placing a new reef, and the depth at which it will function most effectively. Experiments by Japanese biologists show, for example, that certain concrete structures seem to inhibit colonization by desired bottom-dwelling life, in contrast to the performance of reefs of plated or coated metals.

In the east coast experiment, a "station" is a multiple disc sampling apparatus. It consists of a square framework of steel, mounted horizontally above the sea bottom on legs about four feet long, and supporting several dozen test discs about ten inches in diameter on its cross-members. They also lie horizontally. Discs of rubber, steel, concrete, wood, glass and aluminum are being tried, in various combinations. A disc of each material can be removed, by SCUBA divers, at monthly intervals over a period of one or two years. The amounts and types of growth are recorded and compared in terms of their attraction or repulsion to sport and food fishes, crabs, etc.

Collection by divers permits recovery not only of firmly attached growth, but also of nestling forms such as starfish and even juvenile fishes. The array of materials mentioned simulates tires, car bodies, building rubble, bottles and junked aircraft, all of which are available in the quantities required for reef-building.

. . . Milton Werner, Jr.

(See also: ARTIFICIAL REEFS -- A Review. By Iris Unger, Adapted by E. C. Bolster. Special Publication No. 4, American Littoral Society 1966. . . . In your NYSC Library.)

The following report summarizes interim results of laboratory work described in the article, OFF-BOTTOM OYSTER SEED PRODUCTION IN UPPER CHESAPEAKE BAY, by W. N. Shaw, which appeared in NYSC NOTES No. 150, pages 3-4.

CONTROL OF FLATWORM PREDATION ON OFF-BOTTOM OYSTER SEED IN CHESAPEAKE BAY

by
Darryl J. Christensen
U. S. Department of the Interior
Bureau of Commercial Fisheries
Biological Laboratory
Oxford, Maryland 21654

Off-bottom oyster culture has been a focus of research at the Oxford laboratory for several years. Application of newly developed cultural techniques has provided excellent sets of oyster spat on raft-supported cultch at selected sites in Chesapeake Bay. However, in 1968 the laboratory suffered almost total loss of its raft-caught seed due to predation by the flatworm, Stylochus ellipticus. Stylochus is a small, oval, usually brown, flatworm. They are found along the Atlantic coast from Canada to Florida and have been known to cause massive mortalities in juvenile and adult oysters. In the upper Chesapeake Bay they have been found on virtually every oyster bar surveyed. Because of these heavy mortalities inflicted by flatworms on raft-caught and natural seed, the Oxford laboratory has searched for practical and inexpensive control methods.

Reasonable success in saving the 1969 oyster set was achieved by dipping the seed-bearing cultch material in salt brine. Bags or strings of shells were dipped into a saturated solution of salt ($NaCl$) for 2 minutes and then allowed to dry for 15 minutes. In one experiment a group of 2-week-old spat (average count of 62/shell) was treated and re-suspended from rafts. A month later, when the spat were 6 weeks old, half of these shells were again treated. Another group of shells containing spat of the same age and number as the original group was also treated at this time. A fourth group received no treatment, so that uncontrolled predation rates could be observed.

Samples of spat from each experimental group were counted and measured in mid-November, when they had completed their first season of growth. Shells treated both 2 weeks and 6 weeks after setting carried 21 spat per shell averaging 3/4 inch in height. Shells treated only at 2 weeks after setting carried 19 spat per shell averaging 3/4 inch in height, while the control left untreated had six spat per shell averaging 1/2 inch in height. In addition, experiments with raft-suspended oysters yielded similar results.

From our experiments it appears that a single, early brine treatment enhanced spat survival nearly threefold. However, 1969 was an exceptionally good oyster setting year at our raft site, while flatworm setting, based on previous years of monitoring, was about average. Research now underway will determine how soon after setting spat may be safely dipped and how often dipping is necessary when flatworm setting is above average. Another chemical, calcium chlo-

ride ($CaCl_2$), shown to have promise in laboratory trials, will also be studied as potential control for flatworms.

IN PREPARATION -- A VOLUME ON MURICIDAE

(A letter from Anthony D'Attilio, now with the San Diego Museum --)

If my many friends back East wonder why they do not hear from me personally or in little papers written for the NEW YORK SHELL CLUB NOTES, rest assured it is not for loss of interest. The simple fact is that the older I get the harder it seems I am working. Nonetheless I am enjoying things as they are. One subject of my many activities that is keeping me busy these days and evenings is the large amount of work involved in the preparation of the "Guide to the Muricidae" that Dr. George Radwin and I are doing and which we promised to place, complete with colored plates, in the hands of the publisher by Feb. 1971.

In the study of the species that are the subject of this book, we have come across many interesting aspects of research work. One of particular interest is the species for which we have a fine reference but can obtain no specimen that we may photograph. On the other hand we have a number of rare and/or beautiful species which have, to the best of our knowledge, never been described. It has been suggested that we describe and illustrate these new species in our book or even in a separate paper. Either course provides difficulties. Publication of new species in a semipopular book is frowned upon by scientific workers as a whole, and publication in a journal would entail a great deal of time and work which we can ill afford at this time.

In obtaining specimens for illustration we have relied not only upon my own extensive study collection, but have borrowed many rare or little known species from museums and private collections. In going over such large amounts of material it often results that we have to synonymize numerous names. On the other hand we frequently find species that have been misidentified with some published figure but which are in some cases not known to science. Such species have already turned up in localities such as Western Africa, Japan, and the Indo-Pacific.

The book will have 24 colored plates and about 250 to 300 species which will be illustrated. The groups treated will be in the subfamilies Muricinae and Ocenebrinae mostly. Because of the many problems involved in their taxonomy or the difficulty of obtaining specimens for illustration we are omitting the Typhinae, Aspella and its associated genera, and the Trophons. In addition, such polymorphic groups as the Thaididae and Drupinae would unduly complicate matters if they were included.

Inasmuch as nothing worthwhile in a comprehensive sense has been published since the Thesaurus of Sowerby and the Manual of Conchology by Tryon, both around 1880, our book will be the only such work available to collectors and students.

The Best to all of you . . .

Sincerely,

Tony

PUBLICATIONS:

HOW TO KNOW THE AMERICAN MARINE SHELLS

By R. Tucker Abbott, Revised Edition 1970. 222 pages; 152 species illustrated by line drawings, 12 color plates illustrating 123 species. 403 species described of Canada and the United States, Atlantic and Pacific coasts. Signet Reference-Y4233, published by The New American Library, New York. Paperback, $1.25.

This new printing of a 1961 favorite will be welcomed as a handy pocket guide to go with you on vacation and field trips. Names have been updated in many cases; the "List of shells by localities" is a geographical census of the common species most likely to be found in particular areas. There is a digest of shellfishery laws (note that since the printing Florida has passed laws restricting the collecting of live Strombus gigas).

Included also in this compact book: A glossary of conchological terms, chapters concerning the natural history of shells, how to collect shells, and how to organize a shell club.

Both common and scientific names are indexed, thus it is a book for the beginner as well as a handy reference for the more experienced sheller.

dr

EXPLORING FOR SHELLS ON MARTHA'S VINEYARD

By Richards J. Heuer, Jr., illustrated by Holly Heuer, 1970. Sponsored by Felix Neck Wildlife Trust, Inc; printed by Martha's Vineyard Printing Co., Oak Bluffs, Mass. Stiff-paper bound, $3.50. Orders should be addressed to the author at Box 261, Northbrook, Illinois 60062. 102 pages, 97 species described and illustrated in black and white. Listing of species also generally applicable to the shells of Southern Cape Cod and Nantucket.

This will serve as a most useful volume for anyone vacationing on Martha's Vineyard. Mr. Heuer collates several years' personal experience with that of other local collectors. He gives us an outline drawing of the island and marks the shelling spots; he lists the shells found at particular areas; he gives us time of year and whether live or beach specimens; he gives specific directions ("turn northeast on a dirt road...") to reach each shelling spot. His discussions of the shells many times include notes on the mollusk's diet and behavior, or on its use, present and historical, and has produced pages of interesting reading along with the actual shell descriptions.

dr

SHELL MUSEUM

May 20, 1970: A highlight of our recent trip to Florida was a visit to the BEAL-MALTBIE SHELL MUSEUM located on the campus of ROLLINS COLLEGE in Winter Park, Florida, open 1-5 PM weekdays, 2-5 PM Sundays.

Mrs. Nancy Burton, curator, greets you cordially and answers all questions most graciously and explicitly. The collection is the best by far that we have ever seen. Each shell clearly and authentically labeled and in cases well lighted. This is indeed worth going out of your way to see. . . Grace McDougall, Jerry Steele

ARTICLES OF INTEREST

BARRIER BEACHES OF EASTERN AMERICA, by Christopher J. Schuberth, in NATURAL HISTORY MAGAZINE, June-July 1970, pages 46-55.

TRANS-TASMAN MOLLUSCAN RELATIONSHIPS, by W. J. Paul, in BULLETIN No. 22 of the WELLINGTON SHELL CLUB, April 1970, pp.1-3.

MRS. WARD BROWN

It is with deep regret that we announce the passing of one of the leading shell collectors of Florida. Norma Brown, founder of the Palm Beach Shell Club, died in New York City on Thursday, May 21st, 1970.

On different occasions Mrs. Brown had served as a judge at the various Florida shell shows. Her collection of shells has been given to Choate Preparatory School in Wallingford, Connecticut.

. . E. Flynn Ford

Note: The first specimens of Umbraculum plicatulum von Martens in the collection of the American Museum of Natural History were brought to us by Mrs. Brown several years ago. Formerly considered a great rarity in Florida waters, this species was judged the "Shell of the Show" at the Palm Beach Shell Show of 1967.

. . . Wm. E. Old

GEORGE F. KLINE

George Kline last spoke before the New York Shell Club in November of 1968, when he and his wife, Mary, described their expedition to the Sulu Archipelago for the Academy of Natural Sciences of Philadelphia. In earlier years we had been privileged to hear their reports on expeditions to New Caledonia, Costa Rico and Brazil. For his work in Brazil, Mr. Kline was awarded the Câmara Cascudo Cultural Medal of the Instituto de Antropologea at Natal, in recognition and appreciation of his help in establishing a Department of Malacology in the Instituto and for the furtherance of international relations and good will.

Although experts in their work for the Academy, the Klines were not professionals; their expeditions were made on accumulated vacation time, as volunteers for the furtherance of knowledge of molluscan fauna in little-known areas.

The Klines were New York Shell Club members for several years while residing in Madison, New Jersey. On his retirement they moved to Honolulu, in September of 1969.

It was with deep shock and sorrow that we learned of George's death, on June 9th, in Hawaii.

We join their legion of friends in extending our deepest sympathy to Mary.

. . . D. Raeihle

NYSC NOTES NUMBER 164 SEPTEMBER 1970

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ROOM 319, AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: SUNDAY, OCTOBER 11, 1970, at 2:00 P. M.

PROGRAM: COLLECTING IN ALMERIA, SPAIN WITH A VISIT TO THE INSTITUT ROYAL DES SCIENCES NATURELLES, IN BRUSSELS
By Mart Huiswit

THE ARRANGING OF A SHELL COLLECTION
By M. K. Jacobson

NYSC DUES INCREASED

At the September meeting, the proposal was made and accepted that Club dues be increased, chiefly to offset the rising cost of publishing and mailing this journal. Since 1962, when the dues were last increased, postal rates have gone up, and so have the prices of paper, ink and envelopes. Postal rates are expected to jump again in the near future.

Effective October 1st, the new rates will be: full membership, $4.50; corresponding membership, $2.50; others in member's family, at same address, $1.50.

It was noted that it costs the Club, at present, $2.50 to provide a corresponding member with the NOTES for one year.

DOROTHY RAEIHLE STEPS BACK TO ASSOCIATE EDITOR

This journal achieved its present eminence under the guidance of Dorothy Raeihle, who became its editor in 1959. Her professional skill and dedication have, from the first, been evident in the polished prose, neat layout and scrupulous accuracy - in both content and typing - that made these NOTES a worthy vehicle for the fine material they have been privileged to carry.

Dorothy has typed the stencils for the NOTES, with very few exceptions, since December, 1958. Her name appeared on the masthead for the first time two months later. That this little mimeographed monthly has become welcomed and respected across the country and around the world is, in large measure, her achievement. The assembling, editing and stencil-typing for each issue is a considerable task, and the hours that Dorothy lavished on these accomplishments have long since been beyond counting. It was inevitable that she would have to call a halt, eventually, to such a punishing routine.

Her requests for conspicuous cooperation finally became a demand - about a year ago. Since then, it has been her gracious nature that has kept her at the grindstone.

Dorothy will continue to serve the NOTES, but the major responsibilities will be shouldered by two past Presidents, Karl Jacobson and Mike Werner. Henceforth - beginning the middle of this issue - the stencils will be typed by Maria Hulswit, wife of President Mart Hulswit. Karl and I will attempt to duplicate, to a reasonable degree, the "dr" quality of editorship. And I now call upon NYSC members and NOTES readers for contributions - material of a quality that will survive and transcend whatever handling it might receive here.

Taking the liberty of speaking for all readers, I thank Dorothy for the hours, the years, and the love she has poured into these pages, and for the high achievement she brought forth for our enlightenment and enjoyment.

36TH ANNUAL MEETING OF THE A.M.U.

The 1970 meeting of the American Malacological Union, under President Alan Solem, was held in Key West, Florida, July 16-20. The attendance, 268, far exceeded that for any previous meeting. Most delegates were accommodated at the Key Wester Motel, and its convention hall was used for meetings. Twenty members of the NYSC attended, and four contributed to the program, which was assembled by invitation. Karl Jacobson delivered a paper on families and subfamilies of Hydrobiidae, and also outlined his career as a malacologist under the title, "Evolution of a Sheller - Amateur to Publishing Pro." Harold Feinberg spoke on variations in the apertural dentition Triodopsis tridentata. Bill Old conducted an identification seminar, showed slides of fossil shells as seen under ultra-violet light, and gave an illustrated talk on identifying easily-confused species of Conus. In a symposium on biological systematics, Dorothy Raeihle spoke on the feeding characteristics of the Florida snails that live in her kitchen aquarium.

The field trip to Sand Key provided an opportunity to collect by wading and snorkeling, and many delegates ventured on "field trips" of their own, before and after the week of the meeting, and during the week, as well. To New Yorkers, the collecting was outstanding in the number, variety and beauty of the shells, and for the scenic splendor above and below water.

At the annual business meeting, Dr. David Stansbery was elected president for the coming year, with Dr. Arthur Merrill as vice president. The meeting place for 1971 has not yet been determined.

KATSARAS SHELL AUCTION

Conchology's fall classic - Nick Katsaras's annual auction - was, as usual, an all-around success. Several bidders remarked that the array of specimens was particularly fine, and the intensity of the bidding indicated agreement by all 50. Auctioneer Bill Old slyly presented Nick with a large button that read "Starve a rat today." Mr. K., perhaps as much a renaissance man in other ways as he is in his role of auctioning shell dealer, had the good nature and confidence to wear it, and apparently no one equated him with the abhorrent rodent, or had any intention of breaking his rice bowl.

Of the 150 species on the table, the ones that inspired the most determined bidding were *Cypraea hirasei*, *Conus kinoshitai*, two *Cypraea teulerei*, *C. venusta venusta*, *C. teramachii*, *Conus zebroides*, *C. auratus* and *Sthenorytis pernobilis*. Among the rarest species were *Voluta irvinae*, *V. macandrewi*, *Lambis pilsbryi* (9"), *Latiaxis echinata* and *Tibia delicatula*. Two *Pectens* were special prizes because of their yellow color - a brilliant-lemon, five-inch *australis*, and 3-1/2 inch *glaber*, from Lesbos.

A number of acquisitions were made by museums, and by collectors who had traveled more than 100 miles to be present. The date was September 20th, and the scene, the Broadway Dance Studio, Astoria, Queens. The one somber note was Nick's declaration that this would be his last auction. This declaration becomes more somber each time he makes it.

mw

F. A. SCHILDER
1896 - 1970

Recently we received word from Dr. Maria Schilder informing us of the passing of her husband, Dr. Franz A. Schilder, on August 11, 1970. The Schilders resided in Halle/Saale, German Democratic Republic. Dr. Schilder was noted for his lifelong interest in Recent and fossil cowries and their allies. He was a professor of zoology at the Univ. of Halle/Saale until his retirement in 1962. His collection of some 18,000 specimens of fossil and recent cowries, plus several thousand radula slides was bequeathed to the University.

In addition to writing several hundred papers, the Schilders proposed 45-50 new generic names, and almost 500 specific and subspecific names for living and fossil Cypraeidae, Ovulidae, and Eratoidae. *Schilderia* Tomlin (1930) honored F.A. Schilder, while the taxa *Cypraea schilderorum* Iredale (1939) and *Cypraea tigris schilderiana* Cate (1951) honored both Schilders. *Cypraea mariae* was proposed by Schilder in 1927 for his wife, and *Cypraea hirundo francisca* Schilder & Schilder (1938) honored their daughter.

NATURE WALK

On Saturday, July 18th, the American Littoral Society -- whose purpose is the study and conservation of aquatic life -- sponsored a three-hour walk through the Jamaica Bay Wildlife Refuge. Before starting off, Derrickson Bennett, Conservation Director of the society, and Herschel Post, Director of the Parks Council, a private organization, gave brief talks on the topography of Jamaica Bay and on the plan of the Port of New York Authority to extend three runways from J.F.K. Airport out onto the Refuge's salt marsh.

Then the fifty or so members and friends of the society broke up into small groups, bird-watchers heading towards the nesting areas and others, including George Raeihle and myself, tagging along with Mr. Bennett, who had brought with him a five-yard-long seine for his several sampling hauls from the waters of the West Pond. Dr. Mickey Cohen, teacher of marine biology at Rockaway High School, delighted this group repeatedly with his biological expertise.

Most of Jamaica Bay, except for a peripheral navigation channel and parts of Broad Channel Island, is a New York City park. It is an 18½ square mile tract of island, sandy upland, tidal marsh, and water. The Wildlife Refuge itself, which the New York City Park Department established in 1953, is about one mile north of the Broad Channel station of the Independent subway and includes two freshwater ponds on either side of Cross Bay Boulevard. The East Pond extends 100 acres and is pretty much in its natural condition. The West Pond is 40 acres in area and is virtually surrounded by a two-mile path. On the west of this pond is a nesting area for terns and skimmers. In this general area, since 1953, the New York City Park Department has conducted an intensive planting program, which is especially designed to provide food and cover for wildlife, as well as erosion control for loose sand. The success of this program is increasingly evidenced by an important growth of the vegetation in the Refuge and the 305 species of birds that have been observed there -- including terns, skimmers, gulls, egrets, Canada geese, ducks, heron, coot, and ibis.

Unfortunately, Jamaica Bay is grossly polluted. Once it produced 500 bushels of healthy clams annually. Now it is cursed by its incidence of hepatitis, which incidence is about the highest in the United States. Now also, to top it off, comes the plan of the Port of New York Authority to extend three J.F.K. Airport runways to the Refuge's salt marsh, which would severely curtail circulation of water in the ponds and catastrophically damage wildlife in the Refuge.

This project is now being studied by a committee of the Academy of Natural Sciences, which is expected to issue its report soon. A somewhat comparable threat to a section of the Florida Everglades was recently nullified by an enlightened and aroused citizenry. Hopefully, we may see a similar arousal in the case of the Jamaica Bay Wildlife Refuge.

. . . W. S. Murphy

PLEASE CORRECT YOUR COPY: Last item on page 2 of Subject Index for NOTES Nos 101-150. Dr. Morrison visited us in January 1962.

FERNANDO POO, MOLLUSCAN LAND OF LILLIPUT

by Royce E. Hubert

The Island of Fernando Poo, in the Bight of Biafra on the underside of the great bulge in tropical west Africa, has two distinctions. It houses Santa Isabel, capital of Guinea Equatorial, the world's newest republic, and it also breeds seashells of diminutive size.

Why this second fact is so is difficult to understand, for here the seas are warm and gentle, the bays well protected from the occasional storm, and the ground cover and food supply more than adequate. Yet this anomoly of molluscan life does exist, and it would provide an interesting subject for further serious study.

For the most part the differences from the norm have remained unrecognized, and the shells are merely called dwarf forms of their respective species. In 1853, however, Dunker named Cypraea lurida minima as a separate subspecies and, although he gave the Cape Verde Islands as the type locale, he was surely referring to the Fernando Poo shell. I have seen mature specimens of Cypraea lurida minima measuring only 7/8" long, although a large shell may reach an inch and one-quarter. Compared to this, Cypraea lurida Linné of the Mediterranean is a giant of two inches.

The Cowries are further represented by dwarf forms of two other species, Cypraea stercoraria Linné and Cypraea zonaria Gmelin. Cypraea stercoraria of three inches is commonly found in the cool waters of Senegal and Angola, while on Fernando Poo the same species matures at 1¼" and is considered a real giant (and a rare one as well) at two inches. In the case of Cypraea zonaria the normal sized shell averages 1¼ to 1½", while its Fernando Poo counterpart seldom attains one inch and normally matures at 5/8 to 3/4 inches.

A further rundown of some of the more popular genera would show the differences in sizes between the mature shells of Fernando Poo and those inhabiting other areas of West Africa.

	Adult Size Fernando Poo	Adult Size Other Areas
Conus ambiguus Reeve	3/4 to 1"	1 to 1½"
Conus testudinarius Hwass	1¼"	2 to 3"
Murex hoplites P. Fisher	3 to 3½"	7"
Strombus latus Gmelin	1 3/4", often larger	4" +
Cassis tessellata Gmelin	1½"	8" or more
Cypraecassis testiculus senegalica Gmelin	1"	3"
Marginella exilis Gmelin	¼" or less	3/8"

And so it follows pretty much with other shells, as with those listed. I have spent considerable time with the Cypraea, comparing shells, measuring shells and listing features and ratios in the hopes that I might discover some racial differences that would explain the diminutive sizes. There appear to be none. Allowing for the normal variations within a species, the only difference seems to be the size, and that must be attributed to ecological factors which are as yet undetermined.

(Reprinted courtesy of CHICAGO SHELL CLUB NEWSLETTER, March 1970.)

THE CENTENARY CELEBRATION OF THE GERMAN MALACOLOGICAL SOCIETY

This celebration took place in the Senckenberg Museum, Frankfurt am Main on the 24th-26th May 1969. .. The meeting was attended by some seventy five malacologists and friends from over ten countries including Czechoslovakia, Italy, Netherlands, and Great Britain as well as the German speaking countries.

(Included in the presentations was) a lecture by Prof. Dr. Hohorst of the Senckenberg Museum, on the development of the "Lancet leech" and the role played by land snails and ants as intermediate hosts. This was followed by a film called "Ants in the service of Parasites", which dealt with the same subject. It showed how the parasite passed from the sheep to the snail Zebrina detrita Müller and from this to an ant and the ant then being eaten by other sheep whilst on grass they were grazing.

On two days coach trips were arranged to places of interest around Frankfurt. On the first morning we went to the old Rhine island of Kühkopf which was formed by an ox-bow of the Rhine, and is now a nature reserve. One interesting feature of this locality (apart from man-eating mosquitoes) was that it was subject to periodic flooding with the result that all the land snails were found to be living about eight feet above the ground on the branches of trees! What was even more unusual, the species found there included such animals as Helix pomatia L., Cepaea nemoralis (L.) and Arianta arbustorum (L.) as well as the more usual tree-dwelling snails such as Clausilia dubia (Draparnaud) and Laciniaria biplicata (Montagu). Many other species were found including those not native to Britain such as Hygromia (Trichia) villosa Studer, Laciniaria plicata Draparnaud, Clausilia parvula Studer and a very interesting variety of Lymnaea palustris (Müller) which was far larger than any found in Britain.

We then travelled to "Weinkastell Dittelsheim" in Rheinhessen which was a hill top restaurant surrounded by vineyards. After lunch a short time was spent collecting Zebrina detrita Müller and Helicella obvia Hartmann. These species were also found at the next stopping place, which was a small quarry at Weinheim bei Alzey. In this quarry was exposed a classical section in the middle Oligocene marine sands of the Mainz basin. Many fossil marine shells were collected, one of the more notable being a large specimen of Glycymeris sp. This section was described by Frau Dipl-Geol. E. Kuster-Wendenburg of the Palaeontology Institute of the University of Mainz.

In the evening in the grounds of the Museum several people collected specimens of Testacella haliotidea Draparnaud. Most of them were later replaced as it appeared that they were an introduced colony.

On the second day the trips were of a Geological nature to visit localities in the upper Oligocene and Miocene at Falkenberg bei Florsheim-Hochheim and the Mosbach sands (Pleistocene) at Hambusch. This was of particular interest to me as the Miocene does not occur to any extent in Britain, and to be able to collect land and freshwater shells in it was a great pleasure, especially the finding of Cepaea silvatica Draparnaud which occurred in the beds overlying the sand and nowadays is found only in the French Alps and southeastern France.

. . . D. G. Pickrell

Excerpt pp.150-151 CONCHOLOGISTS' NEWSLETTER, No. 33, June 1970.

NOTICE

Philadelphia, Pa.
August 24, 1970

I feel obliged to inform those planning a shell tour to the West Indies that Dr. Donald R. Moore, Mr. Russell Jensen and I have not been associated with Caribbean Seashell Expeditions since July 31, 1970, and we are no longer connected with Mr. George I. Hudson financially nor in any advisory or consulting capacity. We regret that we plan no bona fide shell tours within the near future.

Sincerely yours,

R. Tucker Abbott (sig)

PHOTOGRAPHS GONE ASTRAY

At the close of the September meeting, it was discovered that some photographs were missing, evidently picked up unnoticed along with one of the many items of printed material on the front tables. The photos are the personal property of President Mart Hulswit, who hopes they will be found and returned.

Those who were present are asked to look through any materials they may have been carrying for three 8 x 10 color prints -- pictures of a specimen of Micromelo undata.

NEW MEMBERS & CHANGES IN ADDRESSES SINCE JUNE, 1970 SUPPLEMENT TO ROSTER

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CHANGES IN ADDRESS

LEE, Dr. & Mrs. Harry G. 118 Saturn Street, San Francisco, Cal. 94114

ROTHENBUECHER, Mrs. E. H. 140 East 83rd Street, New York, N. Y. 10028
(as of Sept. 1, 1970)

SOHL, Mr. Paul 28 Poplar Place, Bay Shor, N. Y. 11706
(P.O.Notation, Aug. 1970)

HICKS, Mrs. Edwin S. 1522 Palmwood Drive, Eau Gallie, Florida 32935
(Sept. 1970)

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The NEW YORK SHELL CLUB meets on the second Sunday of each month, September through June, in

ROOM 319, AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: SUNDAY, NOVEMBER 8, 1970, at 2:00 P.M.

PROGRAM: LIVING CEPHALOPODA - by Dr. Edward T. LaRoe
School of Marine and Atmospheric Sciences
University of Miami

UNDERWATER COLLECTING IN FLORIDA AND THE GRAND BAHAMAS - by Christopher & Robert A. Fox

SHELL OF THE MONTH - by Albert Taxson

Members are urged not to miss these presentations, because Dr. La Roe's slides of living Cephalopods in full color are breathtakingly beautiful. Some of us were fortunate enough to have seen his presentation at the A M U meeting in Key West this past summer. Followed by a series of underwater slides taken by a professional diving instructor, Robert Fox, as presented by his young son, Christopher, this will be a particularly fine program.

NOTES ON THE "NOTES"

Our new editor was more than generous in his remarks in NOTES No. 164 on the work of the retiring editor. However, it should be known that the standards were set by the first editor, M. Karl Jacobson, an excellent tutor and strict disciplinarian.

It is our contributors, sharing their knowledge, that have made our publication possible. They are many (see Author Index), but Karl Jacobson and Anthony D'Attilio have been chiefs among them. We are happy that they are still on our editorial staff.

Complete files of NOTES have been placed in a number of laboratories and museums, here and abroad. In recent years these requests have been filled only with the help of donated material, including the files of our late members Dr. Julius Wisoff and Fred Tobleman, and "xerox" copies of out-of-stock numbers supplied by several interested co-workers.

Dorothy Raeihle

REDUCED-PRICE FACSIMILES OF EXOTIC CONCHOLOGY

A few remaining copies of a facsimile edition of Swainson's Exotic Conchology are being offered at a price of $13.75, reduced from $30.00. The facsimile includes both the original text and 48 color plates - "a faithful reproduction of Swainson's 1834 and 1841 classic." A modern analysis of the work, by R. Tucker Abbott and Nora McMillan, has been added. The pages, 9 x 12 in size, are giltedged on three sides. Described as "a useful and rare work belonging in the library of every lover of mollusks," it is available from book dealers, or directly from the Delaware Museum of Natural History, Greenville, Delaware 19807.

BLACK OYSTER FOUND

In a news release from Oxford, Md., dated April 17, the Bureau of Commercial Fisheries of the Department of the Interior reports the discovery of a black oyster by Crisfield, Maryland seafood packer.

"The unique oyster, which was turned over to the BCF's Shellfish Advisory Service in Oxford, was described as large and completely healthy. Shell coloring was normal, both outside and inside, but the meat, with the exception of the gills, was black.

"The dark coloring came from an unusually large amount of melanin, the same substance which darkens human skin, the scientists said.

"Dr. Leslie L. Glasgow, Assistant Secretary of the Interior for Fish and Wildlife, Parks and Marine Resources, said that a search of scientific literature indicated that the black oyster was the first such color mutation ever recorded."

At the request of former editor Dorothy Raeihle, Mr. Arthur Merrill, laboratory director of the BCF, had Mr. C. Austin Farley, the Bureau's molluscan histopathologist, add this note on his findings:

"...The oyster...was reported to have been harvested from the Potomac River. The pigment was found to occur only in the vesicular cells of the connective tissue.

"The pigment was preliminarily identified as melanin; however, definitive histochemistry was not attempted. We interpreted this condition as a physiological disorder of the vesicular connective tissue, possibly of genetic origin."

.....Dorothy Raeihle

A VISIT TO THE INSTITUT ROYAL DES SCIENCES NATURELLES DE BELGIQUE

Last August, my profession took me on a two-week trip to Europe and gave me the opportunity to fulfill two pipe dreams; of collecting in the Mediterranean, and of seeing the Dautzenberg library in Brussels, Belgium.

I shall save my collecting experiences for another article, but my reason for wanting to visit the Dautzenberg Library was quite specific. Philippe Dautzenberg (1849-1935), heir to his father's carpet industry fortune in Paris in the late 1800's, was probably the only amateur collector who ever had all the money he needed readily at his disposal for whatever literature or shell specimen he desired at any given time. Thus, at an early age, he began to amass a malacological library and collection, that, upon his death in 1935, required hundreds of crates for its shipment from Paris to Brussels, when he donated the entire vast accumulation to the Institut Royal des Sciences Naturelles de Belgique, where it is now housed.

My interest in the Library particularly centered on a specific copy of Thomas Martyn's "The Universal Conchologist" (London 1784) described by Dautzenberg in the "Journal de Conchyliologie", Vol. 63, 1917, shortly after he acquired it. Bound into the front of Volume I, there is a manuscript letter written by Martyn to Sir Wm. Hamilton, then Ambassador to the King of Naples. This is the only known manuscript in Martyn's own hand.

My interest in Mr. Martyn, an enigmatic genius about whom startingly little is known, led me some years ago to examine the New York City Public Library copy of "The Universal Conchologist", and, to my surprise, I found the very manuscript letter to Sir Hamilton that Dautzenberg had described. I informed Mr. S. Peter Dance of my find, he being probably the most expert man on the history of Conchology alive today, and he expressed his surprise that the Dautzenberg copy appeared to have been acquired by the New York Library.

Thus, when I learned that I would be passing through Brussels on my business itinerary, I resolved to determine how, or why, the Institute had come to relinquish their copy of this rare and beautiful work.

I arrived in Brussels on a weekday morning, facing a six-hour layover before a connecting flight to Madrid, and found a taxi to take me to "31, Rue Vautiers, La Musee des Sciences Naturelles, au Parc Leopold". The driver eventually deposited me before a modern, landscaped tower of glass and tile, which was connected to an old stone-and-masonry doorway bearing the address. I

learned that the "new" building had been designed and started before the 1939-45 War, had served as a headquarters for the German forces in Belgium, and was still not completed in every detail, the main entrance being strewn with plywood sheets and sand. The facilities inside were absolutely immaculate, however. White ceramic tile walls, terrazzo and marble floors, large windows, long curved halls, and lovely views of the city appeared at every turn, as I was led by an assistant to meet Dr. William Adam, curator of Mollusks, and resident master of the Dautzenberg collection and library.

I introduced myself as President of the New York Shell Club, and he kindly asked how he could be of help to me. As I explained my interest in the Dautzenberg collection, his eyes twinkled happily and he proudly showed me the large index card file for the library. I immediately looked up Martyn's book, and Dr. Adam said, "Our copy is particularly interesting, because it contains a letter written by Martyn to Sir Wm. Hamilton." When I expressed my belief that their copy was now in New York, he said, "This is impossible. Let us have a look!" And off we went to the library wing, right then and there. We found Volume I, looked inside the front flyleaf with quite a bit of excitement, and, exactly where it was supposed to be, was another copy of the same letter!

"There are two identical letters!" I said, after examining it. Dr. Adam had the letter xeroxed for me and while he was thus occupied, I found a sheaf of papers tucked into one of the four volumes, containing, among other things, Dautzenberg's manuscript for that "Journal de Conchyliogie" article, all inkstained, with many passages crossed out and re-written, looking for all the world like a manuscript article turned into to the editor of the New York Shell Club Notes.

I promised to send back a xerox of the New York Public Library manuscript, and we resolved that this puzzle should be further esplored, preferably with Mr. Peter Dance's help.

Dr. Adam then offered to take me on a tour of the shell collection itself. I have never seen a collection so lovingly housed and catalogued. Dr. Adam and his assistant, Mr. Olivier Goosens, have worked together with this collection for over thirty years. Their high degree of conscientiousness shows everywhere. The rooms are kept at uniform temperature and humidity and have automatic fire-doors that would seal off various parts of the collection and isolate any area that was burning. I was very impressed indeed.

Dr. Adams placed Conus Gloriamaris in my hand, Cypraea valentia, Cypraea venusta, and many other precious shells that I had never

seen before. Their C. gloriamaris, incidentally, has a rather long growth scar, but is nevertheless absolutely beautiful.

At one point, Dr. Adam, showing the warm sense of humor that so characterizes this gentleman, pulled a shell from a drawer, and said, "Can you tell me what this is?" It was a puzzle indeed. The first few whorls were elongated, and looked like the Lymnaea stagnalis I had collected in the Ottowa River during an AMU field trip in 1967. The body whorl appeared to be Cepaea nemoralis, which I had seen gracing Karl Jacobson's backyard in Rockaway. The suture where the two species were joined was unnoticeable enough to be really confusing, unless one happened to be familiar with both species. When I offered him my determination he was satisfied that I did know something about shells, and that my interest did not cease beyond the library. Someone, it seems, had inserted a carefully de-shelled Cepaea nemoralis animal into a dead Lymnaea stagnalis, and the poor creature had made the best of it, building his own, undoubtedly more comfortable, shell as he developed, attaching it neatly to the foreign temporary home. Dautzenberg must have been charmed by this artificial freak, and he included it in his collection.

Dr. Adam's particular field of interest in malacology is the Cephalopoda, and he happened to be working on some new material that had just arrived from a Russian research vessel in the Arctic, when I had interrupted him. It was contained in large glass alcohol containers with individual squids wrapped in vinyl bags inside. Dr. Adam also lectures regularly on tropical medicine, parasitology, and has published on the bibliography of the field, as well as an account of the terrestrial and freshwater mollusca of Belgium, with a volume on Belgium Marine Mollusca in the process of publication. In addition, his individual papers are abundant.

Upon my return through Brussels, I had the pleasure of again spending several days in his company. As I pored over the Dautzenberg library card catalog, listing the works which interested me, he dealt with the newly arrived squids and offered me anecdotes about himself, the Belgium Institute and Mr. Dautzenberg, all in a charming, winning manner that I shall remember fondly for a long time. For example, he told me about the "Rue Dautzenberg" in Brussels, which I made a point of photographing later.

My stay in Brussels was interesting, educational and productive, since the problem of the two Martyn manuscripts is going to be the topic of a paper Mr. Dance and I will collaborate on. However, when all is said and done, the most important result of this visit is a reaffirmation of my belief that those human beings who spend time learning about mollusks are very special people, wherever in the world they are encountered, and it will be probably always be so.

.....Mart Hulswit

OCTOPUS BAFFLES SCIENTISTS AT CONEY ISLAND LAB

On September 6th we visited the Aquarium at Coney Island and were delighted to find that one of the most interesting and popular of their current attractions was their 40-pound Pacific Octopus, her eggs, and her young. The small sign told us that it was Octopus dofleini from Puget Sound (and British Columbia), that this specimen had an armspread of 86 inches, and that the seawater in the tank was kept at about 50°F as in its natural habitat. The octopus was guarding great festoons of small white eggs. The eggs were beyond counting, and we had to wait patiently for the octopus to move slightly so we could get a better view. In a smaller adjacent tank, with dim blue lighting, were the young ones that, according to the sign, had started to hatch in mid-August. These, in approximately three weeks, had grown to about 6 mm. long. They were practically all head, translucent white ovals, with eight tiny arms so short they appeared as a small fringe. They were quite active, propelling themselves by their arms in the way veligers propel themselves by their fringed lobes.

Since the three reports we heard on radio and TV regarding the "lady" octopus contradicted each other as to data, we asked Bill Old if he could help us get the facts. He got in touch with the aquarium's director, Dr. James A. Oliver, who wrote: "According to our records the female octopus was acquired on August 7, 1969. Apparently she had eggs on and off in her tank from November 1969. The most recent batch were deposited in June. It was this group that started hatching in late August. The female was isolated from any male from the time she was received in August of 1969. The eggs were approximately 3 mm in diameter and the species of octopus in the adjacent tank was the same as that of the mother. However, one of the scientists at the Osborn Labs. of Marine Sciences believes that the mother belongs to the species Octopus hongkongensis. You can see that we are not highly expert on the matter of the octopus

We consulted "The Kingdom of the Octopus", by Frank W. Lane. Although we learned nothing of the incubation period of the eggs, we did find photographs of an egg deposit that are similar to those we saw at Coney Island. We have no late information on either the eggs or the juveniles. We'd appreciate a report from any of our members who have made a recent visit to the aquarium -- which is worth a trip even if the octopus is no longer multiplying.

.....Dorothy Raeihle

NYSC NOTES NUMBER 166 NOVEMBER 1970

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FOUNDED JAN. 1949

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The NEW YORK SHELL CLUB meets on the second Sunday of each month, September through June, in

ROOM 319, AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: Sunday, DECEMBER 13, 1970, at 2:00 P.M.

PROGRAM: Dr. Kenneth J. Boss, Professor of Biology and Curator in Malacology, at the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

This distinguished malacologist has elected to address us in a popular vein. His subject, "SHELLING DOWNEAST, THE MOLLUSCS OF COASTAL MAINE" is based on his personal collecting experiences on those cold and rocky shores.

The agenda of this meeting includes ample discussion time to concern ourselves with policies and activities that would enhance our future meetings. Please bring your ideas!

SHELL OF THE MONTH

Our second speaker at the November meeting was ten year old member Christopher Fox, an expert SCUBA diver, able underwater photographer and officially the youngest member ever to offer a presentation to the New York Shell Club. We look forward to the further growth of his interest in molluscs, and to more future presentations. His father, Robert A. Fox, a SCUBA instructor and underwater expert has good reason to be proud, and so does the Club.

MRS. H. M. BIXBY

It is with sorrow that we report the death, on November 1st, of Elizabeth Bixby, widow of Harold M. Bixby, after months of declining health. She was 75 years old. Known to us as "Debbie" Bixby, she was a NYSC member since the early years of the Club. Although not a resident of New York City, she was a participating member, attending meetings whenever possible, mailing donations to our Club auction and frequently meeting with us at the Katsaras auctions. Her friendship encompassed everyone. She will be remembered always with affection. Our sincere sympathy is with her bereaved family.

....Dorothy Raeihle

A note from member Glenn Goodfriend, now studying at the University of Rhode Island, included the following rather lovely observation, "....some Lunatia triseriata which I thought might be of interest to you. I found them in one area (Maine), but they were quite common there. The animal is of the purest white and is really huge in comparison to the size of the shell. It's really a beautiful sight to see these delicate creatures crawling over this ugly algae growth. They seem so out of place...."

EDWARD LaROE SPEAKS ON CEPHALOPODS

The guest speaker for the November 8 meeting was Dr. Edward T. LaRoe, a research scientist at the School of Marine and Atmospheric Sciences, University of Miami, who kindly gave up a weekend of his busy time to visit us. He has done pioneering work in raising cephalopods in the laboratory, from the egg right through to the adult stage.

This accomplishment has implications far beyond even the highly, admirable one of rendering these remarkable molluscs more accessible to purely scientific workers. One immediate commercial value in determining the means that permit the "culturing" of this class of mollusca is that it will increase the supply of the squid nerves for neurological research. Squids possess one particular nerve that is larger than the others, and far larger than any nerve in any other creature. Its size and thickness permits laboratory experiments that would otherwise be impossible. However, the seasonal movements of the desired species restrict the catching period to three months of the year. Even taking full advantage of the good seasons wherever fishermen can catch squid, suppliers cannot meet the needs of researchers. Laboratory rearing, on a mass basis, could assure an adequate supply of nerve material, and hasten human medical applications.

Dr. LaRoe noted that the study of cephalopods -- squids, cuttlefish and octopods -- is made particularly fascinating by their brains, which are extraordinarily large in proportion to body size; their highly developed eyes; their use of the ability to discharge "ink"; their spectacular, instant color-changes; and their lightning-like jet propulsion.

Just one of Dr. LaRoe's significant techniques is the use of artificial lighting over the rearing tanks. Applying it for 12 hours out of 24, he has been able to increase the survival rate of hatchlings by 30%, also improving longevity. The light provided is a mixture of long-wave ultra-violet and that of various full-spectrum fluorescent tubes, among them the horticulturalist's popular Gro-Lux.

The specific intent of his presentation to our members, Dr. LaRoe stated, was to show the wide variety of forms found among the cephalopoda. His 75 slides certainly did that, covering an astonishing range of sizes, shapes, colors, and specialized abilities. His subjects included two species of paper nautilus; an octopus that lives in empty clam shells, using their hinged protection much as the original occupant did; a squid photographed solely by the light of its multitude of small light-organs; an adult squid less than a half inch, arms included -- and a six-incher that "bottom-fishes" with two of its tentacles, which may be three feet long. This little angler hovers, and allows the tentacles to dangle down. There are light-organs at the ends which seem to serve as flashing lures, and the bony rings that surround the suction discs are modified into hooks. Photographs of squid egg cases showed the tiny embryos clearly. Others caught the young ones just after hatching. Various phases of chromatophore changes were illustrated that are used by the animal as camouflage. This included, in one case, the sudden manifestation of a pair of "eyes", causing it to appear to be a completely different, much larger creature.

A lively question-and-answer period followed, during which Dr. LaRoe was asked to explain what happens to the males after they deposit their detachable spermatophore arm inside the female's mantle. The answer: it is generally assumed that he dies soon after, since males with the arm missing are not found in the field alive. He was also asked how he captures the specimens he rears. This is done from a small boat at night, in the Gulf Stream off Miami, with a bright attracting light, and a gigging device, with which the animals are simply hauled aboard into suitable containers, then rushed ashore to their tanks.

A recent incident at the Marine Laboratory was recalled with a certain amount of embarrassment. Dr. LaRoe told how a young boy sneaked onto the lab grounds, on Miami's Virginia Key, to do some fishing. When apprehended, he had just landed a squid, which later turned out to be a new species. The involuntary discoverer was never identified, and to this day, remains unaware of his contribution to Malacology.

....M. W. & M. H.

From Mr. Right is Dead, by Rona Jaffe, Page 151

"....When we graduated, four of us went to Washington to work in offices, share a house, and find husbands. I had been a zoology major in college, studying such unfeminine things as mollusks, but when we went to Washington, I decided to become a secretary along with the others, because we were almost twenty-one and not getting any younger. Everyone knew you found nothing among the mollusks but shells and a lot of ugly old men."

REVIEW:

JOHNSONIA, Vol. 4, No. 48
Review Number

The Review Number of JOHNSONIA appeared on June 29th, 1970. This contains an index for Volume 4, which is now completed. Since its inception in 1941, Dr. William J. Clench has authored or edited some 1500 pages of monographs devoted to the marine mollusks of the Western Atlantic. The present issue states, "The material published (herein) is but a small part of the new information available on the various species covered in JOHNSONIA. However, space is limited and so we are restricting it to certain pertinent new data in the Volutidae and Conidae."

Species figured and discussed are young specimens of *Voluta musica* removed from the egg capsule, and *Odontocymbiola subnodosa*. Drawings of the radular teeth of these species, and of *Voluta virescens*, are shown. Among the cones treated are species that were not well known at the time of Dr. Clench's previous *Conus* monograph in 1942. For *Conus centurio*, for example, Dr. Clench and R. C. Bullock state, "At the time this species was treated in JOHNSONIA, only a single specimen with precise locality data was available.

Conus hieroglyphus Duclos is discussed in detail, as well as the confusing citations and mispellings to be found in the literature. This was a "lost species" for about a century. Until recently it was often considered to be merely the juvenile form of *Conus regius*. Discussions of *Conus aurantius* Hwass and *Conus insularis* Gmelin follow. In old collections, and in the literature, both of these species were considered to be from the "Indo-Pacific", rather than from the Caribbean area. (For the latter species, the present reviewer maintains that the Linnaean name, *Conus cedonulli*, should be used).

The review continues with a discussion of *Conus ermineus* Born, 1778. For several years this taxon was erroneously applied to an Indo-Pacific species. Presently it is applied to a species with a West African-West Atlantic distribution, and better known as *Conus testudinarius* Hwass, 1792. Unfortunately, this is a later name than that of Born. JOHNSONIA in 1942 had labeled this species as *Conus ranunculus* Hwass, which is now considered to have been a case of mistaken identity. The review closes with brief discussions of several recently described *Conus* from Brazilian waters.

....William E. Old Jr.

MALACOLOGICAL TERMINOLOGY OF THE SOLOMON ISLANDS

Recently in the reading room of the public library I came across a grammar and dictionary of the language spoken in the Sa'a and Ulawa regions of the Solomon Islands (Walter G. Ivens, *Dictionary and*

Grammar of the Languages of Sa'a and Ulawa, Solomon Islands, Carnegie Institution, Washington, D. C., 1918). The first paragraph I happened to glance at had the word for cowrie. It is *puli*. There were other expressions with *puli*. For instance, the golden cowrie is *puli 'ehi'e*, a pair of cowries is *oa ni puli*, a string of cowries *talai puli* and that's all. Apparently, of all the lovely colorful cowries found in the Solomon Islands, the islanders distinguish only *Cypraea aurantia*. All the others, are simply *puli*.

As I continued leafing through the dictionary part of the book, other interesting things struck me. I was surprised to note how few of the shell species were distinguished by separate names. When a shell *is* distinguished, it was interesting to see in how many different senses this happened.

The bivalve *Chama sp*. is called *'ime*. A chama easy to free from its substrate is an *'ima susulu*, but one hard to detach is *'ima susu*. The cat's-eye turban shell (*Turbo petholatus*) is important since it seems to have two names, either *läuhi* or *älili*. The cat's-eye itself, the operculum of the turbo, is called *musi ni 'elili*. (*e* and *ä*, as in German, seem to be interchangeable in sound). A cuttle fish is *monaki* and its bone is *hote ni monaki*, which makes us think that cuttle bones play some important role in the economy of the island.

Of special interest is the cone shell which is called *la'o*. The work *la'o-la'o* is part of an expression, according to the dictionary, meaning contorted with the spasms of tetanus or lock-jaw. Probably also the spasms caused by the bite of a poison cone shell.

A distinction is made between *Haliotis* meat (*hangoda*), and *Haliotis* shell (*hinui hangoda*). This is logical since the word *hinui* means the shell of a shellfish. The pearl oyster (*Pinctada*) is also important. The black-lipped pearl oyster is called *roa* and is used as a coconut scraper. The golden-lipped oyster is called *dähi*. Poetically enough, *dähi* is also the name for a phase of the moon. A pearl is *u'u maai dehi*, and to go diving for pearl shell is *suu dehi*.

Nautilus is an especially important decorative article, used in making inlays. The chambered nautilus is *reoreo*, and an especially large specimen is called *reoreo alaha*. There are no fewer than five terms referring to the different ways of cutting and inlaying pieces of this shell. There are also five terms for different kinds of shell ornaments which are worn. The most interesting one is *qangoqango* (pronounced *pwangopwango*) which means an ornament of clam shell stuck in the nostril and bored at the outer end, where it is decorated with porpoise teeth. (Try that on for good looks!)

Finally, among many other comments I could make but won't for lack of space, the word for snail is *aropu* or *qaateru* and a real large snail is *qaateru a'i'i*. And a snail-eating place is *hänua ana ngäu aropungo*.

by Morris K. Jacobson

MORE ON LAND SHELLING AND POISON IVY

Since reporting on one of my inevitable misadventures with poison ivy, while land shelling (Notes No. 153, P.3), I can add two further notes on the subject: 1) a way of avoiding infection, and 2) a second-hand method of getting infected. I recommend the first, but it's only fair to present both sides of a subject. The reader may make his own choice.

1) While the reported blemishes were still healing, I added a pair of white cotton gloves to my collecting gear, the kind that doormen and ushers wear. What counts is that they work. I've gone through two collecting seasons, and a number of collecting trips, without ivy poisoning. Not on my hands, that is. And, to qualify further, not from the collecting.

The gloves are an occasional hindrance, but I had one or the other off many times, and by being careful about what I touched, including the outside of the glove, I was apparently staying within the bounds of safety. I finished by peeling them carefully and then they went into the wash. In use, the fingers always get wet through, and I think the application of Ziradryl before and brown soap after, are still important.

I've thought this with particular certainty since last July, when I found myself literally sitting on a full-blown rash for a week. The timing and placement put the blame on a rock that I had sat upon for a few minutes of concentrated collecting. There was a vine, but not ivy on it, some moist earth, and perhaps a few dead leaves. I came away with a wet seat, and trouble I didn't suspect. The one bright note is that if I had used brown soap on the moistened area, the rest of the rest of the world wouldn't have this warning.

2) I have a mild outbreak on my right wrist and hand right now, and for a while it was as much a mystery as a similar one, much worse, a year and a half ago. Neither could be connected with a collecting trip or other direct exposure. But this time, I managed to make a connection between the timing and one particular shell-cleaning session.

I had kept some snails alive for a time, hoping that the body coloration would aid in making certain identifications. Then, before the periostracums could deteriorate seriously, I drowned them. To loosen the soft parts, I let them soak in water that was changed frequently, but procrastination dragged this process out for about a month. I finally cleaned them by hooking a half-inch hose to a faucet, pinching the raw end of the hose to create a jet, and shooting it into the shells. Whatever washed out hit my right hand, and quite apparently some of that bunch had been munching on the noxious leaves.

I hope soon to have a more sophisticated squirting device that should solve the problem -- but meanwhile, there's always the rubber glove.

....M. Werner

IT'S BETTER THE WAY KIDS SEE IT

In a delightful article in the March-April issue of OCEANS magazine, an elementary school teacher shares with an unprepared world some examples of youthful thinking and self-expression regarding things oceanic. To the browsing conchologist, "Out of My Class," by Gary Evans, yields the following live-collected rarities.

A pupil who seems to think like the U. S. Army Corps of Engineers - to a point - has a word of reassurance for tide-pool collectors: "If the shoreline of Maine was straightened out, it would reach to Mexico. But we must cut government spending somewhere." But another apparently knows something that the first doesn't. He time-bombs the whole question with, "The North Atlantic Ocean is located between America and Europe at the present time."

A future politician has this word for fossil collectors: "Most authorities think that sea life of antiquity lived long ago."

One forgetful learner reports, "I looked up what a coral atoll is twice but I forgot it three times." He's topped by one who asserts, "You should always say octopi when you mean there are two or more octopuses."

Here's a murky prediction of interest to SCUBA-ing collectors: "So far, divers have only been able to swim around in circles with no more than 360 degrees. This could be the next big breakthrough in diving."

The Wright brothers and Robert Fulton would have liked the open-minded scholar who wrote, "When people try to live under water these days, we no longer call them crazy. We call them oceanographers."

One lad who seems to be living on borrowed time has a brother who is a brother to us all: "Disturbing my brother's collection of seashells is a very exciting way of getting killed."

And a girl who is wiser than she knows gives us this to remember: "The oceans are so big and wondrous they are just to look at, not to understand."

NYSC NOTES NUMBER 167 DECEMBER 1970

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NEW YORK SHELL CLUB NOTES No. 167 DECEMBER 1970 Page 1

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ROOM 319, AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: Sunday, JANUARY 10, 1971, at 2:00 P.M.

PROGRAM: Mrs. Marian Hubbard, Club member and Secretary of the American Malacological Union, on "The Genus Thais in the Western Atlantic".

A Shellecture, "Life Story of the Tree Snail *Liguus fasciatus*", by Fran Hutchings of Coconut Grove, Fla. This recorded talk, with eighty slides, is based on her exhibit, which, in 1969, won her the American Museum of Natural History's Award for Scientific Excellence.

SHELL OF THE MONTH - Mr. Dupuy Greer

ENDANGERED MOLLUSCAN SPECIES

NOTE: Members of the N. Y. Shell Club should be familiar with the problem of endangered molluscan species. The mollusks are generally overlooked in conservation efforts. Shell enthusiasts must therefore make their voices heard. As a beginning, interested persons should own and study the recent publication of the American Malacological Union on its 1968 symposium on rare and endangered mollusks. The proceedings of the symposium were reprinted, in May, 1970, from *Malacologia*, Vol. 10, No. 1, and are available as a 56-page booklet. The eight papers included are:

Eastern Freshwater Mollusks. (I) The Mississippi and St. Lawrence River Systems. David H. Stansbery
  Discussion: Arthur H. Clark

Eastern Freshwater Mollusks. (II) The South Atlantic and Gulf Drainages. William H. Heard
  Discussion: Herbert D. Athearn

Western Freshwater Mollusks. Dwight W. Taylor (summary)
  Discussion: Harold D. Murray

Eastern Land Snails. William J. Clench
  Discussion: Dee S. Dundee

Western Land Snails. Allyn G. Smith

Eastern Marine Mollusks. R. Tucker Abbott
  Discussion: Joseph Rosewater

Western Marine Mollusks. A. Myra Keen
Discussion: William K. Emerson

Brackish-Water Mollusks. J. P. E. Morrison

Introduction and Summary: Arthur H. Clark

Copies can be ordered from the AMU Secretary, Mrs. Marian S. Hubbard, 3957 Marlow Court, Seaford, N. Y. 11783. Price, postpaid, $1.15.

From a letter: Marc J. Imlay, National Water Quality Laboratory, Duluth, Minn., to Ann Speers, Chairman, AMU Comm. on Endangered Species:

August 13, 1970

"Dave Stansbery concurs with your idea that the individual shell clubs in each state could help by drawing attention to the endangered freshwater mollusks in their individual states. There are endangered species in all of the south central and eastern states and even in Minnesota (a species of *Lampsilis*). Probably the focal point is the south Appalachian fauna in Tennessee, Kentucky, Virginia, and North Carolina. Other prominent states are Ohio, Georgia, Florida, Texas, Pennsylvania, Missouri, New York, Alabama, Louisiana, Indiana, and Arkansas. Shell clubs in these states could be expecially helpful."

AN ADDITION TO THE SYMPOSIUM ON RARE AND ENDANGERED SPECIES

Carol B. Stein
Assistant Curator of Natural History
Ohio State Museum, Columbus

Rare and endangered species of river snails and mussels were a major topic of concern to scientists and shell collectors representing universities, museums, and shell clubs from coast to coast who attended the American Malacological Union's 1970 annual meeting at Key West, Florida.

About 250 of the approximately 1,000 native North American river mollusks are now in danger of becoming extinct, according to Dr. D. H. Stansbery, president of the AMU. A number of species of river snails and mussels have already become extinct since pioneer days, because of water pollution and the destruction of their habitats.

North America's fresh-water mollusk fauna is the most varied and extensive of any in the world, and it constitutes an irreplaceable national heritage of great interest to scientists. Many of the larger bivalve mollusk species were formerly used as raw material in button manufacture, and hundreds of tons of these shells are

now being exported annually to Japan to be used in the cultured pearl industry. Various species are admired and eagerly sought by shell collectors around the world.

Io, the large and beautiful river snail which is the emblem of the American Malacological Union, was widespread in the rivers of the southern Appalachian Mountains as recently as the 1920's. It is a fitting symbol of the national organization for the study of mollusks because it is a truly American species, never having been found outside North America. Today it stands high on the list of vanishing species.

Large boulders in the waters of the larger streams in the Tennessee River system have been Io's only habitat for thousands of years. This habitat has now been almost completely eliminated. Today only a very few, tiny populations of this beautiful snail survive in a few headwater streams which have thus far escaped both severe pollution and impoundment.

America's most spectacular freshwater bivalve is probably Canthyria spinosa, the Spiny Naiad. Its long slender spines are believed to serve as stabilizers in the shifting sand bars in the clean, swift waters of the Altamaha River system in Georgia. It has never been found in any other river in the world. The survival of this endemic freshwater species is now threatened by proposed plans for the commercial development of the only river where it and its ancestors have lived for millions of years.

All 250 of these rare and endangered mollusk species are the products of hundreds of thousands of generations in unbroken lines of descent from past ages. AMU scientists note that most, if not all, of them are much older than mankind himself. Now the once-widespread populations of these mollusks have become so restricted that their ancient lines of descent can be broken in a single season. Just one slug of pollution, or the elimination of the last remnant of their habitat by dredging, siltation, or building dams, can eliminate these ancient animals forever.

The establishment of selected rivers as natural preserves for these rare mollusks and for other endangered species of aquatic animals is proposed by the American Malacological Union's new Conservation Committee. Certain rivers contain relict populations of several of the endangered molluscan species. Such refuges, AMU members point out, would not only preserve vanishing American snails, mussels, and other river animals, but would also maintain wild stretches of natural streams for popular outdoor recreational activities such as canoeing, hiking, and birdwatching.

SHELLING DOWN EAST -- THE MOLLUSKS OF COASTAL MAINE

A presentation by Dr. Kenneth J. Boss, Museum of
Comparative Zoology, before the NYSC December 13.

("Down East" refers to the geographic area of Maine and the more southerly of the Canadian Maritime Provinces. The term is an Americanism; its origin appears to be obscured by time. --Ed.)

In his opening remarks Dr. Boss informed us that Maine is in the Boreal zone -- and that the simplest definition of "Boreal" is "cold". The Boreal zone, or Province, extends from the southern coast of Newfoundland to Cape Cod Bay; the water temperature in summer rises only into the 50°-65° F. range, in winter it is from 34°-39°. Thus there is not much swimming or snorkeling; "wet suits" are necessary if one is to remain long in the water. Most of Maine's long coastline faces southeast; it is indented with many bays and inlets, providing a variety of ecological stations from rocky cliffs to marshy areas. The waters are extremely rich in plankton.

Dr. Boss' first color slide typified "the rockbound coast of Maine", a magnificent scene of sky, cliffs and sea. Here the rocks at the surf line were dotted with Dogwinkles, _Thais lapillus_, peppered with barnacles that are a part of _Thais'_ diet, and draped with rockweed on which _Littorina obtusata_ is frequently found. Further down, in the sublittoral zone, lived the Chitons, _Ischnochiton_ and _Tonicella_, and Limpets, _Acmaea testudinalis_ and _Puncturella noachina_. Dr. Boss commented that the _Littorina Littorea_ and barnacles found further off shore were larger than those at the shoreline. Close-up photos were studies of the variability in color and form within a species, well demonstrated in the _Thais lapillus_, _Acmaea_, _Littorina saxatilis_, and _L. obtusata_.

Other scenes of ecological stations showed more stretches with steep cliffs at the water's edge, and others with but low rocky fingers reaching seaward, sometimes framing a sandy cove. In one area an immense sand/mud flat was exposed at an extremely low tide, bringing a surprising number of species into the observer's range. In addition to the mussels and clams, marsh, mud and moon snails so familiar to us, unusual and spectacular nudibranchs were discovered as they crawled low among the rocks. There were slides of _Scyllaea_, _Doto_, and _Cratena_, with colorful cerrata that would change color according to the type of food that was ingested. Their egg strings were attached to and wound around strands of sea vegetation; they differed slightly with each species but all were gelatinous "ropes" containing hundreds of minute whitish eggs.

In some inlet areas mud, vegetation and particles of rock clump together and assume the nature of peat. In these live borers such

as *Barnea costata* and *Zirfaea crispata*. Using *Zirfaea* as an example, Dr. Boss pointed out the strong shell with rasplike sculpture at the anterior end of the borer as distinguished from the curved or angled ridges on *Petricola*, *Mya* and other bivalves that burrow (rather than bore) into softer substrates. In such areas *Odostomia* seminuda, usually parasitic and nicknamed "the marine mosquito", is found generally with the mud snail, *Ilyanassa obsoleta*. Another tiny molluscan "blood-sucker", *Stylifer*, parasitizes the Green Sea Urchin, which is rather common along the Maine coast.

Next was an account of species taken by dredging offshore in depths of 40' or more. Contrary to popular impression, *Neptunea decemcostata* occurs in tremendous numbers -- but offshore. Also taken by dredge from these depths were *Buccinum undatum*; the so-called "Bay" Scallop, *Aequipecten irradians* (subspecies *gibbus*); the Pelican's Foot, *Aporrhais occidentalis*; the lovely *Epitonium groenlandica*, *Pandora gouldiana* and *Thracia conradi*. This *Thracia*, however, is so fragile a bivalve that it is invariably fractured when taken by dredging. Dr. Boss reminisced about the specimens given as banquet souvenirs at the Ottawa meeting of the American Malacological Union: the perfect specimens had been tediously collected for the occasion by a diver who handpicked them from a muddy bottom. (Good specimens are so unusual that several of the delegates were persuaded to donate their souvenirs to their museums. --Ed.)

A clump of sea grass from the depths bore a bulb-like protrusion at its base; within the protrusion was a little bivalve, *Musculus*, which uses its byssal threads to build itself a nest. Another find, on "junk" brought up in the haul, was of Chitons clinging to an old, encrusted, glass bottle -- thus all the material must be examined before discard.

A special dredge was used to skim only 2 cm. from the surface of a sandy/muddy bottom. These hauls brought up *Yoldia thraciaeformis*, *Nucula*, *Syphodentalium* and other small mollusks that live in the surface sands.

Then of course there is *Placopecten magellanicus*, the great Deep Sea Scallop so well known as a delicious food. These along with *Mya arenaria* and *Mercenaria mercenaria* are enjoyed at their best along the Maine coast, as any visitor will attest. The *Placopecten* are commercially fished in deeper waters, and one trawl that had been lowered to 100' collected also a giant squid, the *Architeuthis* of the North Atlantic. It was perhaps 25' long, and quite awesome in appearance. It was a fitting specimen with which to conclude the presentation on the mollusks of coastal Maine.

Dorothy Raeihle

FOOTNOTES

To:

BLACK OYSTER FOUND (NOTES No. 165, p.2). The unusual specimen was of the species Crassostrea virginica Gmelin. The article, mistakenly credited to Dorothy Raeihle, was arranged from information received from Dr. Arthur S. Merrill, Director of the Oxford, Maryland, Biological Laboratory.

To:

OCTOPUS BAFFLES SCIENTISTS AT CONEY ISLAND LABORATORY (NOTES No. 165, p. 6). Reference was made to photographs in the book "Kingdom of the Octopus -- The Life-History of the Cephalopoda" by Frank W. Lane, 1957 (Jarrolds Publishers Ltd., London, 30s). The particular photographs referred to were of the common octopus, Octopus vulgaris Cuvier, with her egg cluster, plate 28, and of newly hatched O. vulgaris, plate 29. The upper photo on plate 29 could have been a life-size likeness of the young ones we saw at Coney Island. The egg cluster on plate 28 was of similar form to that of the dofleini.

A word about "Kingdom of the Octopus". The book is written in popular style but contains much information. Mr. Lane has collected scientific reports and interspersed them with tales that range from factual to legend. Within the 287 pages there are 44 photographic plates, 13 line figures, appendices, bibliography, and index. There are descriptions of the behavior and reproduction of several species of Cephalopoda, but that of the Coney Island Octopus, whether it be dofleini or hongkongensis, is not among them.

Of the young that started to hatch last August at the Coney Island aquarium, none lived more than 30 days. John Clark, Curator, told us that the staff had tried various substrates, various currents, various foods, in an attempt to keep the young alive -- but too little is known about the natural habitat of this species and the requirements of the newly hatched. Other laboratories, also, have remarked on the extremely high mortality rate of octopus hatched in captivity.

dr

To:

A VISIT TO THE BRUSSELS INSTITUTE (NOTES No. 165). Dr. Adam of the Institut Royal des Sciences Naturelles de Belgique, in correspondence to President Mart Hulswit, refers to Mart's article when he kindly writes, -- "Many thanks for No. 165 of the Notes. I read with much interest your account of your visit to our Institute. It contains a few inaccuracies. --- Dautzenberg was not an heir to his father's carpet industry. E. Lamy published in 1935 an obituary (Journal de Conchyliologie, 79, pp 183-203) in which you can find the details. Dautzenberg's father, who lived in

Belgium, was a poet and editor of publications in the Dutch language .....Dautzenberg himself married on April 17, 1872, in Paris, a Miss Braquenié, whose family were big manufacturers of carpets. He worked in this enterprise. --- During the war the new building of the Institute did not serve as headquarters for the Germans, but as storerooms. --- As to the puzzle I showed you, it is composed of Lymnaea stagnalis and Helix aspersa (not Cepaea memoralis). --- The Rue Dautzenberg is named after Dautzenberg's father."

G. DALLAS HANNA

Dr. G. Dallas Hanna, Curator of the Department of Geology of the California Academy of Sciences, author of a number of molluscan works, and Chairman of the Committee for the Preparation of the MacFarland Manuscript, died Friday, November 20, 1970.

A distinguished zoologist, paleontologist, geologist, and master technician and inventor, and a world-famous student of diatoms, Dr. Hanna, 83, had been at work at the Academy on Friday. Dr. Hanna had been with the Academy, serving in many capacities, for more than fifty years, and continued active research up to the time of his death. (From Mr. J. T. Carlton, California Academy of Sciences.)

(In) MOLLUSCAN DIGEST, Vol. 1, No. 1, January 1, 1971

SHELL SHOW DATES

South Florida Shell Club - Museum of Science, Miami - Feb. 6 - 8

Broward Shell Club - Swimming Hall of Fame, Ft. Lauderdale - Feb.12-15

Palm Beach County - Science Museum & Planetarium, W. Palm Beach - Feb.17-21

St. Petersburg S.C. - Treasure Island Auditorium - Feb. 24 - 28

Sanibel Shell Fair - Sanibel Island - March 4 - 6

Southwest Florida Conchologist Society - Fort Myers - March 10 - 14

(Peter Dance, of the National Museum of Wales, will be among the judges at several of the forthcoming shell shows. Bill Old will join him in the judging at the South Florida S. C. show.)

NYSC NOTES NUMBER 168 JANUARY 1971

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The NEW YORK SHELL CLUB meets on the second Sunday of each month, September through June, in

ROOM 319, AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: Sunday, FEBRUARY 14, 1971, at 2:00 P.M.

PROGRAM: A Shellecture, "Practical Ecology for the Shell Collector", by Dr. Rudolf Stohler. Dr. Stohler is eminently qualified to speak on this topic, as he is a well-known biologist who has spent 42 years combing the beaches of the Pacific Coast - not just for fun, but with the serious object of obtaining living specimens of all sorts of sea creatures for classroom study at the University of California. We feel certain you will derive much benefit from viewing the program, whether it be for the study of ecological conditions or simply for the enjoyment of an excellent program with beautiful slides.

SHELL OF THE MONTH - _Crepidula plana_ Say

by M. Karl Jacobson

1971 AMU CONVENTION

Extract from a letter from Dr. David H. Stansbery, President of the American Malacological Union:

"In 1971, we will be the guests of the Astronaut Trail Shell Club at Cocoa Beach, Florida. The dates will be (in all probability) July 15-19, inclusive. This site is 350 miles this side of Key West* and offers a location on the beach with collecting of land, freshwater, estuarine, oceanic, and fossil mollusks at hand. The group there will do their best to make the meeting a pleasant and profitable one in spite of our 'two in a row' in Florida."

*Cocoa Beach is about 10 miles south of Cape Kennedy.

The "Photographs Gone Astray" referred to in Notes No. 164, September 1970, Page 7, have been recovered, and returned to the owner. They were found among items in the Club Library by librarian Harold Feinberg. Someone apparently thought they were library material!

COLLECTING AREAS IN GUADELOUPE

Sandra K. Hunter

Guadeloupe comprises a group of islands in the Leeward chain, in the Lesser Antilles. The collecting areas described here are on the two larger islands of the group - Grande Terre and Basse Terre.

Gosier: on the south shore of Grande Terre. The beach of white sand is about 30 feet long, with low limestone cliffs on either side. Gentle waves. The substrate is low rocks covered with algae, and small sandy patches. Gorgonians grow in about 10 to 12 feet of water.

Pointe des Chateaux: at the southeast tip of Grande Terre - a limestone point terminating in two sea stacks. High surf. To the north of the point is a small crescent beach subjected to heavy surf, with pockmarked limestone formations north of it. About a half-mile farther north the water is calmer. There are long low ridges of algae covered rock.

Anse Bertrand: West of the north coast of Grande Terre. Gently curving beach of about 200 yards. About 15 yards offshore a reef protects the beach from high surf and forms a small lagoon. A very strong current runs from west to east parallel to the beach. The western end of the lagoon is filled with dead coral heads, in the shape of elkhorns, bearing algal growth. Near the center of the lagoon is a large stand of living yellow-orange coral in the shape of elkhorns; this coral is coated with a sticky substance. There are also smaller growths of a pink, flame-shaped coral. The extreme eastern end of the lagoon is more open, with a few very large rocks.

This area is very rich in small, brightly colored reef fishes. The bottom is covered with long-spined sea urchins.

Near Sainte Rose: On the north coast of Basse Terre. Low, smooth rocks covered with mud and algae. The water is rough, muddy, and filled with garbage.

Grand Anse, near Deshaies: On the northwest coast of Basse Terre. A wide, gently sloping beach of orange sand in about a half-mile crescent. High headlands at each end of the beach. Long, gentle swells. Out to a depth of 15 feet there is nothing but orange sand on the bottom. Nearer the headlands there are a few rocks with feathery growths of algae.

Gosier May 10 - 15, 1969 (b) = beach

Arcopagia fausta Pulteney (b)
Astraea caelata Gmelin
Astraea tuber L.
Brachidontes exustus L.
Cerithium algicola C. B. Adams
Chama congregata Conrad
Columbella mercatoria L.
Coralliophila abbreviata Lam.
Coralliophila caribaea Abbott
Cyphoma gibbosum L.
Cyphoma signatum Pilsbry and McGinty
Fissurella barbadensis Gmelin
Leucozonia nassa Gmelin
Littorina ziczac Gmelin
Livona pica L.
Neosimnia uniplicata Sowerby
Nerita peloronta L.

Nerita tessellata Gmelin
Nitidella laevigata L.
Nodilittorina tuberculata Menke
Planaxis lineatus da Costa
Pteria colymbus Röding
Purpura patula L.
Tegula excavata Lam.
Thais haemastoma floridana Conrad

Pointe des Chateaux May 11, 1969

Area 1: Surf-washed, pockmarked limestone with numerous tide pools

Area 2: Low rock ridges with algae; gentler waves than in area 1.

Area 3: Surf-washed beach. All specimens here were found dead.

Acmaea pustulata Helbling 1
Conus mus Hwass 3 (b)
Cypraea cinerea Gmelin 3 (b)
Cypraecassis testiculus L. 3 (b)
Diodora listeri Orbigny 3 (b)
Fissurella barbadensis Gmelin 1
Hemitoma octoradiata Gmelin 3
Hipponix subrufus subrufus Lam. 3 (b)
Leucozonia ocellata Gmelin 2
Littorina meleagris Potiez & Michaud 1 & 2 *

* Much more abundant at 2

Littorina mespillum Muhlfeld 1 & 2 *
Littorina ziczac Gmelin 1
Livona pica L. 1
Nerita peloronta L. 1 & 2
Nerita tessellata Gmelin 2
Nerita versicolor Gmelin 1 & 2
Nitidella nitida Lam. 3 (b)
Nodilittorina tuberculata Menke 1
Puperita pupa L. 1
Tectarius muricatus L. 1
Thais rustica Lam. 2
Trivia pediculus L. 3 (b)

Grand Anse (near Deshaies) May 14, 1969

Tricolia tessellata Potiez and Michaud

Anse Bertrand May 16, 1969

Acmaea sp.
Astraea caelata Gmelin
Astraea tecta L.
Astraea tuber L.
Barbatia cancellaria Lam. (b)
Cantharus auritulus Link
Cerithium litteratum Born
Cerithium sp.
Cerithium variable C.B. Adams
Chama congregata Conrad
Columbella mercatoria L.
Conus mus Hwass
Conus regium Gmelin
Coralliophila abbreviata Lam.
Coralliophila scalariformis Lam.
Cypraea cinerea Gmelin (b)
Drupa nodulosa C.B. Adams
Leucozonia nassa Gmelin
Leucozonia ocellata Gmelin
Mitra nodulosa Gmelin
Phalium cicatricosum Gmelin (b)
Thais deltoidea Lam.

Near Sainte Rose May 14, 1969

Acmaea antillarum Sowerby
Acmaea sp.
Fissurella nimbosa L.

OF ILYANASSA OBSOLETA (=NASSARIUS OBSOLETUS) Say

by Dorothy Raeihle

I first collected *Nassarius obsoletus* for my kitchen aquariums because they are scavengers. They thoroughly but gently cleaned out the small or very fragile shells that are difficult to clean without breaking. Later I had a few *Nassarius trivittatus* (also from Bayville, N. Y.), and still later, *Nassarius albus* (=*ambiguus*) and

N. vibex from Florida. Of these four species, Nassarius obsoletus was the odd one.

All the rest had two little tentacles at the back of the foot (caudal cirri) and shiny yellowish tan operculums, with some serration at the edge to fit snugly into the spiral ridges of the shell, while obsoletus' foot and dull black-brown operculum had no projections. Yet the many-faceted egg cases of obsoletus and trivittatus were so alike that only a professional could tell them apart, and that under magnification to determine the position of the hatch area. The Florida Nassarius - albus and vibex - deposited smooth, almost look-alike cases that were quite different from those of our Bayville obsoletus and trivittatus. All the species hatched as swimming larvae (planktotrophic veligers). The feces varied: obsoletus excreted pellets that were made up of closely packed balls; the pellets of trivittatus appeared under 30X as bundles of parallel rods; the feces of albus and vibex were soft strings. This was my first experience in observing likenesses and differences within a genus; I was most interested but always puzzled.

In browsing the literature I had found these species placed sometimes in the genus Nassa, sometimes Nassarius, once Buccinum, but only obsoletus was ever called Ilyanassa. Thus when "Seashells of North America" (Abbott, 1968, Golden Press) designated our common mud snail as Ilyanassa obsoleta rather than the recently familiar Nassarius obsoletus, I appreciated that this mollusk was acknowledged in a popular publication as being a bit different. (See text, page 140, with facing plate of excellent figures illustrating shells, animals, operculums and egg cases.)

"Ilyanassa obsoleta" is not a new name. In our own small home library we find it used by professionals more often than "Nassarius obsoletus". In 1865 Stimpson erected the genus Ilyanassa for only the one species, Ilyanassa obsoleta. Poirier remarks that some considered it only as a subgenus of Nassarius. It appears that for approximately a hundred years the scientists have been divided in their opinions, and may still be.

The Latin word "nassa" means a wicker basket with a narrow neck. The common name of the Nassariidae is "Basket Shells". The Greek "ilys, ilyos" = mud, slime, + nassa, a wicker basket, + obsoleta = obsolete; eroded at the apex = Ilyanassa obsoleta, the eroded Basket Shell that lives in the mud. And that it does, all the way from the Gulf of St. Lawrence to northeast Florida. The degree of erosion varies with the station. Of those we have collected, the most badly eroded were from the Canarsie area of Jamaica Bay, N. Y.; those from Bayville, on Long Island Sound, are in good condition. When fine specimens are found they are usually juvenile.

Literature cited:

"An Up-to-Date Systematic List of 3200 Seashells from Greenland to Texas: Translation, Explanation and Gender of Their Names," 1954, Henry Poirier, New York.

A COMMENT ON THE NAME ILYANASSA

Morris K. Jacobson

In recent shell books our common basket mud snail has had its Latin name changed. It is no longer *Nassarius obsoletus*; it is now *Ilyanassa obsoleta*. The name *Ilyanassa* was introduced in 1865 by Stimpson and for many years was regarded not as a genus but as a subgenus (Tryon 1882, Thiele 1929, Tucker Abbott 1954), and as a subgenus it could be disregarded in common reference.

As long as the species was called *Nassarius obsoletus* it was immediately associated in the mind with its co-geners *Nassarius trivitatus* and *Nassarius vibex*, the other local basket snails. If however, the new name wins out, this relationship will not be obvious. It will become a matter of extra esoteric knowledge (i.e. that *Ilyanassa* is really a *Nassarius*) and an added burden on the memory.

Now, why the change? *Obsoletus* is different from the other nassas. Admitted. But different enough to be completely removed from the genus? It looks like a nassa, it has the shape and size of most nassas, it has an internal columellar ridge like all nassas, its early postnuclear whorls are reticulated like those of all nassas, its aperture and siphonal canal look like that of all nassas. In short, even if the differences exist - and they do - the obvious similarities are so great that anyone coming upon *obsoletus* for the first time, will immediately recognize it as a nassa. On the other hand, the characteristics which make it *Ilyanassa* will have to be pointed out secondarily. Thus they are obviously good SUBGENERIC differences.

Let us look at a similar case. There are three slipper shells in our area: *Crepidula fornicata*, *Crepidula plana*, and *Crepidula convexa*. All are still in the one genus, *Crepidula*. But observe the differences between the three: *plana* is flat, white, rather fragile, with a distinctive kind of inner shelf or septum and apex pointed straight back; *fornicata* is arched, more solid, light brown with dark brown streaks, with an apex turned to one side, and a distinctive shelf with a wavy margin; *convexa* is small, highly arched, dark solid brown in color, and with a still different kind of septum. Moreover, if you want non-shell characteristics, only *fornicata* has the peculiar habit of piling one on top of the other to form a "stick". This species also changes its sex as it becomes older. No one knows if the others do the same.

I maintain that the differences found among *Crepidula* are as great as those found among *Nassarius*. And yet the former are still all *Crepidula*, whereas the latter now has two generic names, and probably will end up by having three. (*Vibex*, according to Tryon, is in the subgenus *Phrontis*). Back to *Crepidula*. Have the differences I noted above been given any recognition? Yes. *Plana* has been put in the subgenus *Janacus*, and *convexa* in *Garnotia*. If it becomes common practice to put *obsoletus* into *Ilyanassa*, then we should have *Janacus planus*, *Granotia convexa*, and *Crepidula fornicata*. Maybe it will come to that. But I do not believe such a step would be an improvement to local malacology. Nor will the change to *Ilyanassa obsoleta*.

MOLLUSKS INTRODUCED BY MAN IN ARIZONA *

I. LAND SNAILS AND SLUGS:

1. *Helix aspersa* O.F. Müller (the "garden snail"). Often abundant in irrigated gardens, nurseries, etc.; reported thus far from Phoenix, Tucson, Yuma and Prescott. Native in Europe; introduced to many parts of the world and now widespread in U.S. and Mexico.
2. *Otala lactea* (O.F. Müller). An edible snail imported into the U.S. as a food item. For sale in 1964 at a store in Tucson. Live specimens were found in the open in patios in Tucson from time to time; but there are apparently no permanently established colonies thus far in the State. Native in southern Europe.
3. *Rumina decollata* (Linne) (the "decollate or truncated snail"). The most common snail of irrigated areas in Arizona; feeds mainly on decaying plant material; reported from Phoenix, Tempe, Mesa, Yuma, Tucson and Florence. Native in the Mediterranean area of Europe and North Africa; now common near houses in the southeastern U.S. to Texas, south New Mexico and California.
4. *Lamellaxis gracilis* (T. Hutton). A small snail probably overlooked thus far in Arizona, where it has been collected only as dead shells in drift debris of Santa Cruz River at Amado. Originally described from India; but its original home is uncertain, as it is now nearly cosmopolitan in the Tropics of both Old and New Worlds.
5. *Oxychilus draparnaldi* (H.H. Beck). A medium-sized snail, known thus far in the State only from Phoenix (in a greenhouse in 1961) and Tucson (in the open in a nursery, 1970). Native in Western Europe; reported from several eastern states and in the West also from Oregon, Washington, California and Colorado.
6. *Limax maximus* Linne. A slug native to western Europe, known thus far from the State at one locality near Flagstaff, where it was collected in August 1970. Now widespread in southern Canada and much of U.S.
7. *Limax flavus* Linne. The usual "lettuce snail," native of temperate Europe, but spread by man to most parts of the world. Probably now living in most cultivated parts of Arizona, although there are only 3 definite records from the State at present (Tucson, Phoenix and the cienega of Babocomari Creek in Cochise Co.).
8. *Limax valentianus* de Ferussac. A fairly common adventive slug in Arizona, where it seems fully established in the open (feral) in some localities. It is definitely recorded from Phoenix, Tucson, Nogales, Santa Rita Mts. (Madera Cn.), Huachuca Mts. (Ramsey Cn.) and Chiricahua Mts. (Cave Creek near Portal). A native of the Mediterranean area, now introduced to many parts of the world. This is the slug called *Limax marginatus* (by error) by Pilsbry and other American authors. *Limax poirieri* Mabille is a synonym. (May be shown in the literature as belonging to the genus *Lehmannia*.)

9. Deroceras reticulatum (O.F. Müller). A native slug of Europe, introduced to many temperate parts of the world; the most destructive pest of gardens and produce in much of North America. It was found some years ago by A.R.Mead in Tucson and it was intercepted in 1969 in a nursery in Phoenix on a shipment of plants from California, where it is widespread. (May be shown in the literature as belonging to the genus Agriolimax.)

10. Milax gagates (Draparnaud). A native slug of Europe, now carried by man elsewhere and nearly cosmopolitan. Known in Arizona only from one site in Phoenix (1957).

11. Succinea campestris Say. A native snail from SE United States, from South Carolina to Florida and Alabama. Introduced in Arizona, where it has been reported thus far only from the Tucson area, in 1964 and 1968.

12. Vallonia pulchella (O.F.Müller). This minute snail is native to Europe, northern Asia and the eastern U.S. and eastern Canada. It appears to be an introduction by man in post-Colombian times in the western half of North America. There are few records from Arizona: Phoenix, in a lawn, 1968; Tucson, in gardens, 1955,1963, 1067, 1970; Ajo, in a lawn, 1967; Nogales, in a patio, 1962, 1965, 5 mi. NW of Payson, in a section of cottages; drift of Oak Creek Cn. near Sedona; drift of Little Colorado Riv. at Winslow.

II. FRESHWATER SNAILS:

13. Radix auricularia (Linne). A large pond snail, widespread in Europe and northern Asia. Introduced by man to North America, where it was first reported from a greenhouse in Chicago in 1901. It spread rapidly in North America and is now well established in the cold temperate areas. It was first seen in Arizona in 1965 in Coconino Co., where it is now widespread in the lakes, as well as in Navajo Co. and Apache Co. It was found recently (Aug.1970) living in the open in ponds in Tucson.

14. Biomphalaria havanensis (L.Pheiffer). This flat snail (planorbe) is a native of tropical and subtropical North America and the Antilles; in the U.S. it is probably native (pre-Colombian) only in Texas and Louisiana. In Arizona it is known only from a few living colonies in artificial lakes or ponds (Pena Blanca Lake and a nearby pond, Santa Cruz Co.) artificial pond at Quitobaquito Springs in Organ Pipe Cactus Monument, Pima Co.). It was probably introduced with fish brought in to stock the waters.

15. Viviparus chinensis malleatus (Reeve). A large operculate pond snail native of East Asia, where it is commonly eaten. Introduced in North America as a favorite food of Orientals, it has become well established in many area. In 1962 there was a thriving colony in a small pool on Campus of Univ. of Ariz. in Tucson; for a while there were also some in one of the fish tanks at the Dept. of Biological Sciences; but they are no longer at any of these stations.

III. FRESHWATER CLAMS:

16. Corbicula fluminea (O.F.Müller), the Asiatic clam, native of Eastern Asia, was first seen in U.S. in 1938 in the Columbia River (Washington). It has rapidly spread over much of temperate U.S. In Arizona it is common in the Colorado River drainage in Mohave Co. (Lake Mead), Yuma Co., Maricopa Co. (Phoenix, etc.) and Yavapai Co. (Verde River). Some authorities prefer to call the North American form Corbicula manilensis (Philippi) or C. leana Prime.

17. Anodonta corpulenta Cooper. A native clam of the Missouri and Mississippi drainages. It was introduced recently in Arizona, probably with fish carrying the glochidia of the clam. Thus far it is established in the open only in Coconino Co. (Lake Mary, Aug. 1951; Lake Kinnikinick, Aug., 1969).

Other mollusks introduced for aquaria or intercepted by quarantine, etc., but not yet found in the open in the State, include Achatina fulica, Porphyrobaphe iostoma, Pomacea bridgesii (Reeve; often in aquaria) and probably others.

* Excerpted by Dr. Joseph C. Bequaert from the unpublished manuscript "Zoogeography of the Nearctic Southwestern Mollusks; with a Check List of Arizona Species" by J. C. Bequaert and W. B. Miller of the Department of Biological Sciences, University of Arizona, under grant support from the Arizona-Sonora Desert Museum.

THE MEDICINAL SNAIL

Considerable healing powers have been attributed to the common garden snail, Helix aspersa L. through the ages. Its use in medicine was first recorded by Pliny, who stated that some snails beaten in warm water cured coughs, and that sore throats should be anointed with juice drawn from living snails. The mucilaginous broth obtained from snails probably is soothing to a dry, sore throat, and it is this which may explain the almost universal and remarkably long-lived belief that snails in various forms are good for pulmonary troubles. Until quite recently the glass blowers of Newcastle held an annual feast of snails to "strengthen their lungs" for the coming year.

In 1728 Dr. J. Quincy pronounced about snails: "They abound with a slimy juice; and are experienced very good in weaknesses and consumption, especially for children and tender constitutions. To make a syrup of snails, take Garden snails, early in the morning while the dew is upon them, on pound; take off their shells; slit them; and with half a pound of sugar, put them in a bag; hang them in a cellar and the syrup will melt and drop through; which keep for use. It possesses in the best manner all the virtues of snails."

That the administration of snail potions was not always welcomed by the patient is implied in these instructions given by Mrs. Delaney in 1758: "Two or three snails should be boiled in the barley water which Mary takes, who coughs at night: she must know nothing of it, they give no manner of taste. Six or eight boiled in water and strained off, and put in a bottle would be a good way of adding a spoonful of

the same to every liquid she takes; this must be fresh done every two or three days, otherwise they grow thick."

Almost a century later, in 1854, M. de la Marr, of Paris, was expounding the virtues of Helicin, the glutinous extract obtained from the snail and "long given in broth for pulmonary phthisis", as a domestic remedy.

In France, snails were dried and concocted into cough lozenges. For consumptive diseases of the lungs, the snails were not only eaten but also crushed and rubbed on the back and chest, the snail juice being extolled by some as superior to cod liver oil.

Although snails have always been primarily considered a specific against pulmonary complaints, they have also tended to be treated as a veritable panacea. The London Dispensatory (1696) states "the flesh (of snails) cools, thickens, consolidates, is pectoral, strengthens the nerves, cures coughs, asthmas, spitting of blood and consumptions; (used outwardly they ripen tumours, imposthumes and carbuncles." The Rich Storehouse of Medicine (1650) directs that "for any manner of boil, fellin or uncome, take twenty garden snailes and beat them, shells and all, in a mortar until you perceive them to be come of a salve, then spread a little thereof upon a linen cloth and lay it on the place grieved... and it will kill the fellin". This source further recommends "a very sovereign remedy for the gout, take a good quantity of snails and pick them forth of the shells and stamp them in the mortar: then put them in a pretty quantity of salt, salet oyl, and sope and stamp them all well together in the mortar with the snails; then take the same and make a plaister thereof, and apply the same to the place grieved, and so let it ly for the space of 3 days and this will destroy the gout."

A mixture of pounded snails and crushed parsley was used as a poultice to cure "scrofulous swellings". Boyle gives " a tryed medicine for a whitloe" in his Collection of Medicines (1695): "Take House snails and beat them, shells and all, in a stone or wooden mortar so long till they be reduced to the consistence of a cataplasm, which apply some what warm to the part affected, and keep it on for sixteen or twenty four hours, renewing it then if need be." Local application of snails was also recommended to cure obstinate eczema of the skin.

The powdered shells also, according to an old medicinal writer, are "Lithontriptrick and good for the gravel, they cure clefts or chops in the hands, lips or fundament. Aqua Cocklearium, distilled from the snails in May and October being excellent against consumption and a cosmetick; it also takes away corns and warts."

That snail remedies were taken seriously in bygone days is evidenced by the entry in the London Gazette of March 23rd. 1739 which tells that Mr. Joanna Stevens received from the Government then in power £5,000 for revealing the secret of her famous cure against "stones". The cure consisted chiefly of snails, eggshells, soap, honey and herbs.

There are many even more esoteric medicinal uses of garden snails to be found in the records, particularly in rural areas. Thus in South Hampshire snails were made into a poultice with soaked bread crusts

and applied "to help weak eyes". Gloucestershire yields two typical recipes: to cure earache a snail was pricked and the froth which exudes is dropped into the ear as it falls: and also a sufferer from "ague" in this county would often wear a live garden snail in a bag around the neck for nine days. The bag would then be opened and the snail thrown on the fire when it would "shake like to ague", thus curing the patient. Such was the faith in the healing power of snails that one country remedy for warts did not even require contact with the beast. The cure was reputedly effected merely by "pricking a live snail's shell as many times as one had warts in number" and then impaling the snail upon a blackthorn in the hedgerow. As the snail died and withered the warts were supposed to wane and disappear.

Charles Pettitt
Ass't. Keeper of Zoology
Manchester Museum (Gr. Brit.)

(Excerpt from CONCHOLOGISTS' NEWSLETTER, No. 34, September 1970.)

1971 MEETING, WESTERN SOCIETY OF MALACOLOGISTS

The Fourth Annual Meeting of the Western Society of Malacologists will be held at Asilomar, Pacific Grove, California, from June 16th to 19th, 1971. Symposia and contributed papers will be presented on a wide spectrum of malacological topics.

Inquiries about the meeting should be made no later than May 15th and should be directed to the Secretary, Mrs. Mary D'Aiuto, 804 Fielding Drive, Palo Alto, California 94303. Applications for membership should be directed to the Treasurer, Mr. Ralph Fox, Dept. Invertebrate Zoology, California Academy of Sciences, Golden Gate Park, San Francisco, California 94118. Dues are $2.50 for Regular Members and $1.00 for Students.

Executive Board members for the year are: President, Dr. Eugene V. Coan; First Vice-President, Mrs. Beatrice L. Burch; Second Vice-President, Dr. Warren O. Addicott; Secretary, Mrs. Mary D'Aiuto; Treasurer, Mr. Ralph O. Fox; Members-at-Large, Mr. Barry Roth and Dr. James H. McLean; the three most recent Past Presidents, Mr. D. K. Mulliner, Dr. William K. Emerson, and Dr. Myra Keen.

JANUARY, 1971, SUPPLEMENT TO ROSTER OF NEW YORK SHELL CLUB

We welcome our new members, and bring you to date on changes in address since our supplement of June, 1970.

NEW MEMBERS

BROWN, Mrs. Kaye	3155 Grand Concourse, Bronx, N. Y. 10468
deFRISE, Mrs. Edna E.	740 Madison Avenue, New York, N. Y. 10021
DONALDSON, Mrs. Catherine	1364 Lexington Ave., New York, N. Y. 10028
ELITZAK, Mr. Howard	563 Links Drive South, Oceanside, N.Y. 11572
KUCHLIK, Mr. William	104 Dumbarton Drive, Huntington, N. Y. 11743
KUCHLIK, Miss Jane	
MAYERHOFER, Miss Meta	111-09 76th Road, Forest Hills, N. Y. 11374
MULLER, Mr. Edward	235 Lincoln Place, Brooklyn, N. Y. 11217
NELSON, Mrs. Frank J.	1856 Madison St., Brooklyn, N. Y. 11227
PARIS, Miss Linda	G.P.O. Box 2217, New York, N. Y. 10001
PEASE, Mrs. Josephine	128 Morningside Ave., Yonkers, N. Y. 10703
PFAFF, Mrs. Fred R.	5531 N. Campbell Ave., Chicago, Ill. 60625
RABINOVICH, Mrs. Rhea	617 West End Ave., New York, N. Y. 10024
REDMOND, Miss Gabrielle	866 East 45th St., Brooklyn, N. Y. 11203
ROTHSTEIN, Mrs. Estelle	117 East 34th St., New York, N. Y. 10016
ROTHSTEIN, Mr. Nathaniel	220 Madison Ave., New York, N. Y. 10016
STAR, Mr. Jordan	186 Parkway Drive, Roslyn Heights, N. Y. 11577
STEWARD, Mr. Orville M.	The Bayard Cutting Arboretum, P. O. Box 66, Oakdale, New York 11769
SUSSMAN, Mrs. Marie	4523 Avenue "H", Brooklyn, N. Y. 11234
WOOD, Mrs. Toni	216 Franklin, River Forest, Illinois 60305
ZENKER, Mr. Al	7829 73rd Place, Glendale, New York 11227

CHANGES IN ADDRESS

CRAINE, Mrs. Zur W.	161-C Pelham Lane, Rossmoor, Jamesburg, New Jersey 08831
FREED, Mr. Sam D.	Deerfield Park, Bldg. 8, Apt. 7, Hightstown, New Jersey 08520
HAGERTY, Mr. Timothy	41 Perry St. (2D), New York, N. Y. 10014
HICKS, Mrs. Edwin S.	1522 Palmwood Dr., Eau Gallie, Florida 32935
JENSEN, Mr. Russell H.	Mt. Vernon Place, Route 1, Box 55, Chadd's Ford, Pennsylvania 19317
LACKNER, Mrs. Mae	140-18 Casals Place, Bronx, New York 10475
LEE, Dr. & Mrs. Harry G.	118 Saturn St., San Francisco, Calif. 94114
MARINCOVICH, Mr. Louis	Dept. of Geological Sciences, University of Southern California, Los Angeles, California 90007
PALMA, Dr. & Mrs. Nicholas	#2 Fuller Lane, Brick Town, N. J. 08723
ROTHENBUECHER, Mrs. E. H.	140 East 83rd St., New York, N. Y. 10028
SOHL, Mr. Paul	28 Poplar Place, Bay Shore, New York 11706

TEMPORARY (WINTER) ADDRESSES

ABRAMS, Dr. Joseph L.	4730 Pine Tree Drive, Miami Beach, Florida 33140
CATE, Mr. & Mrs. Crawford	P. O. Drawer "R", Sanibel, Florida 33957

NYSC NOTES NUMBER 169 FEBRUARY 1971

NEW YORK SHELL CLUB INC.

FOUNDED JAN. 1949

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The NEW YORK SHELL CLUB meets on the second Sunday of each month September through June, in

ROOM 319, AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: Sunday, MARCH 14, 1971, at 2:00 P.M.

PROGRAM: George Raeihle -- "Sanibel Revisited"

Morris K. Jacobson -- "Malacology for the Shell Collector"
The first of a series of popular lectures on the animals that make our shells, and how they function and developed in evolution.

SHELL OF THE MONTH -- Edward F. Cowles
Purpura patula pansa, Gould 1853

NOTE! THE APRIL MEETING WILL BE APRIL 18, THE THIRD SUNDAY, AND WILL BE THE YEARLY SOCIAL MEETING, NOT HELD AT THE MUSEUM

RUFAS AND THE CALICO SCALLOP

Scientists at the National Marine Fisheries Service Exploratory Fishing and Gear Research Base in Pascagoula, Mississippi have known for some time that the calico scallop beds off the north Florida coast could give commercial fishery interests a shot in the arm. But, in order to determine the value of the resource and how it might efficiently be managed required some doing. For the scallops were covered by 150 feet of water.

Base engineers went to the drawing boards and came up with RUFAS - the Remote Underwater Fishery Assessment System. RUFAS is a towed vehicle bent on ferreting out scallop beds. Its sophisticated optical system is connected by electrical cable to a vessel which serves as a remote control center.

A trained pilot can maneuver RUFAS to any position over the seabed while electric motors turn the brainchild's maneuvering vanes. Special sensing devices are used to determine its height above the seabed in addition to scouting for uncharted obstructions. The optical system - composed of special lights, television, and 35 millimeter cameras - is also operated from the control center. When RUFAS is gazing at the seabed, the television monitor and video tape recorder give scientists a high quality picture of the terrain. The motion picture camera can be operated whenever biological phenomena need to be recorded.

RUFAS to date has already provided timely information for commercial fishermen about the location and abundance of calico scallops. Even more important, it has provided scientists valuable information concerning growth rates, spawning and density of the previously elusive calico scallop.

From Conservation News, Nov. 15, 1970

AMERICAN LITTORAL SOCIETY SYMPOSIUM

The American Littoral Society's symposium, "Your Future in the Sea," will be held on Saturday, March 6, at Hunter College, 695 Park Ave., New York City. During the afternoon session, noon to 5:30, panel discussions on the following subjects will run concurrently: Sharks and Rays; Local Wreck and Reef Life; Diving with Antarctic Seal; Local Coastal Zone Pollution; Undersea Habitats; The Striped Bass; Marine Mammals. For young people, Harold Goodwin, of the Sea Grant College Program (National Science Foundation) and other scientists will offer guidance on careers and education, in private interviews, throughout the afternoon.

The evening program will start at 8:00 p.m. with the prize-winning film, "The Hungry Sea," made by Australian underwater photographer Ben Cropp. A new film on sharks, by Stanton Waterman, will follow. Then Dr. Wheeler North, of the California Institute of Technology, will discuss findings in marine science on the west coast.

Admission fees are $2.50 for the afternoon, $3.50 for the evening, or $5.00 for both. Tickets can be ordered from: American Littoral Society, Sandy Hook, Highland, New Jersey 07732.

ON CATALOGING SHELLS

(Morris K. Jacobson)

I have seen and read about many ingenious systems of cataloging the species and specimens in a shell collection. These are generally based upon the idea that shell species can be coded and numbered like stamps or coins. This idea is quite incorrect. When stamps are printed or coins minted, they appear in a single form and in a fixed quantity. There is never any doubt as to their "determination" or placement. Hence a code number once given remains valid forever and everywhere.

But shell species are living things and their status is not fixed. Many generic name changes take place (frequently back and forth a number of times!) and familial placements of species are altered. Any attempts to keep up with this welter of problems in a coded system quickly becomes intolerably cumbersome and time-consuming. Eventually the system becomes so difficult to follow that it's a hindrance to the collection itself, and leads to complete discouragement with the hobby. I know, because I began with some sort of coded system myself, but for the reasons outlined above, had to give it up after a few years. Then began the extremely burdensome task of recataloging.

There is another possible problem connected with the coded catalog system. When such a collection is finally passed on, it may become a source of frustration and time loss, and many of the specimens, if not all, may well end up in the trash can.

The best and most efficient way to organize a catalog is to give a number to each lot of shells - not individual specimens - consecutive numbers beginning with 1 and going straight on. (If you think that

the smaller numbers will look silly, begin with 100. No harm done.) This is the system followed in all museums, and the one that permits immediate reference and retrieval of data. The catalog number, name of species (if known -- otherwise omit it for the moment), and all the data (exact locality, ecological notes, if any, date of capture and name of collector or dealer are written in the catalog and copied on the label. The number is then written in waterproof india ink on the shell specimens, or in the case of tiny shells, on the vial or shell container, or on a slip of paper which is then dropped into the vial. (The catalog may also have space for remarks, in which such things as the previous owner or owners of the specimen, plus their catalog numbers, can be entered. Writing directly on the shell is better than writing the number on a gummed label to be fixed to the shell. The label can come loose in the presence of moisture and be lost - after all, shells sometimes do get washed. Moreover, any sticker quickly becomes dusty and soiled, and it cannot be easily cleaned.

One collector raised the objection to me that india ink is not easily removed from a shell specimen when the specimen changes owners. But it may well be asked why should the old number be removed at all? It adds some history to the specimen, which may in time turn out to be very valuable to a future student. Even if this does not happen, the old number, like the history of a rare gem or painting, adds some individuality to the specimen marked with it.

In this connection, it is also extremely important to preserve the original label or labels, especially if the specimen was not collected by the owner of the collection. I foolishly discarded these in my younger collecting days because I wanted the tray of specimens to be "pretty". I have had many reasons to regret this ever since.

It may well be that for a small collection some kind of coded system is feasible -- at first! But collections inevitably grow, and in a short time all the problems outlined above rise like an Egyptian plague.

I have heard the objection raised that "a numerical system does not give enough information about the shell". Actually it is not supposed to do that. Emerson and Ross in CURATOR, a quarterly issued by the American Museum of Natural History, wrote (Vol. 8, 1965, p.338): "The primary purpose of a catalog (number) is to insure against the loss of information to a specimen." That is, if the label is lost, the data can be readily recovered from the catalog. All other purposes are illusory.

Emerson and Ross (op. cit.) give much additional information on arranging a numerical system. Valuable data is also available in the handboo "How to Collect Shells" published by the American Malacological Union, and available for $2.00 from the secretary, Mrs. M. S. Hubbard, 3957 Marlow Court, Seaford, New York 11783

"202 QUESTIONS FOR THE ENDANGERED COASTAL ZONE"

The American Littoral Society has published a guide to conservation action in the coastal zone, addressed to such questions as:

> How do planning boards measure the benefits of housing developments in tidal marsh against the environmental damage that the development will cause?
>
> How does a citizen convince his township committee that a nearby estuary is not the place for a factory?
>
> What approach should be made to convince a state conservation department to enforce tight standards on coastal zone development?

The conservation guide, "202 Questions .. For the Endangered Coastal Zone," is for governmental agencies which regulate the coastal area and for individuals engaged in conservation efforts along the nation's coasts.

The introduction states: "This book stresses the importance of study before action by providing the reader with questions that deserve answers. Elected and appointed officials should learn to expect these questions and they in turn should ask them of those who plan modification in the coastal zone."

The book emphasizes the value of coastal areas -- tidal rivers, salt marsh, estuaries, and the shallow seas off the coast -- as habitats for marine life and as recreational resources. It provides questions that should be posed regarding channel dredging, coastal zone mining and drilling, tidelands real estate development, beach erosion control projects, and water pollution from domestic or industrial sewage, thermal pollution, oil spills, and pesticides.

Examples of questions that should be asked when a developer asks for permits to dredge and fill salt marsh include: Have biologists established basic biological productivity of the area? Does a person or firm doing dredging and filling have (a) riparian rights to land being developed below high water line, (b) dredging permit, including approval of state? Corps of Engineers? (c) Does permit include conditions to prevent silting? Does the municipality have a wetlands ordinance? Similar questions apply to the other catagories of modifications planned for coastal areas.

The book is edited by D. W. Bennett, conservation director of the Littoral Society. "The questions emphasize the need to look into all aspects of proposed changes to the shallow, productive edges of the sea," Bennett said. "It is up to those who propose or support change to prove that their work will not have an adverse affect on the coastal marine environment."

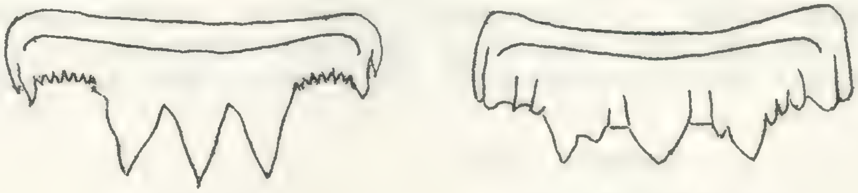
The book will be distributed to members of the Littoral Society and to municipal, state, and federal agencies which regulate coastal zone development and use. Copies of the book are available for $1.00 from the Society's offices in Highland, New Jersey.

WHY CHANGE THE NAME OF THE LOCAL DOG WHELK?

Morris K. Jacobson

Recently some writers have begun to put our common dog whelk into a different genus. Instead of calling it *Thais lapillus*, they call it *Nucella lapillus*. I am not fond of seeing such changes, and undertook to investigate the reasons advanced for it. I learned that, unpalatable as we may find the change to be, it is justified on important morphological grounds.

In Thiele's great "Handbuch" (1929, pp. 297, 298) there are illustrations of the central tooth of the radula of both *Thais* and *Nucella*. Below are tracings of these illustrations.



Thais Nucella

(after Thiele)

It is obvious that they are quite different. The question is: is this difference important enough to justify a transfer of genera and a consequent change in name? By itself, the answer should be, no. But there are other considerations.

The shells which Abbott calls "thorn drupe shells", genus *Acanthina*, look very much like dog whelks. However, they can easily be distinguished. They all have a sharp spine or thorn on the base of the columella. This spine is the reason for Abbott's English name. The Latin name *Acanthina* likewise is based upon the word for thorn. Apparently Acanthina uses this spine to force apart the valves of the small clams on which it feeds.

Now *Acanthina*, according to Thiele, has a central tooth which resembles that of *Nucella*. And this type of tooth is also found in the local *lapillus*. Since the eastern *lapillus* lacks the spine - *Acanthina* seems to be confined to the West Coast - it is obvious that it cannot be considered an *Acanthina*, in spite of the similar radulas. Nor can *lapillus* be placed with Thais, which has an entirely different central tooth. Thus we have a group of mollusks which have a shell similar to that of one genus and a radula similar to that of another. The only taxonomically satisfactory solution is to put such mollusks in a genus of their own - in this case, *Nucella*.

There are, no doubt, other important differences between *Thais* and *Nucella*, but the situation described above is usually alone considered to be sufficient grounds for establishing a different genus.

FROM THE MAILBAG:

WHY MAINE IS "DOWN EAST"

In #167 I note your reference to "Down East", the origin of which appears obscured by time. I have at least one source for this origin.

Among our very good friends is one of the few surviving captains of the wooden ship days -- Capt. Stinson Davis of Five Islands, Maine. He has been on national TV, and at 87 is at least as active as I am. Last year he gave me a huge Cassis tuberosa brought back about 1920 in a wooden sailing ship.

His explanation for "Down East" runs this way: In the old days of Maine, almost all language dealt with sailing ships. With a prevailing wind from the west, any ship bound east was going downwind, hence any eastern Maine port was "down east". They always went "up" to Boston, or upwind; but New York was foreign territory, and thus excluded -- no one went "up", they simply went to New York. Typically Maine.

Best wishes,

Philip Cameron

...The expression "Down East" is not lost in antiquity at all. Nautically, down means to leeward, or downwind (as) quoted in Bradley's "They Live By the Wind," a book on sailing as a craft in the United States....So, since the prevailing winds blow from Massachusetts up the coast to Maine, Maine is "down" from, say Boston.

You...will not find this term in most dictionaries. However, you will find a more common term, "easting down," listed. This is common amongst sailors and yachtsmen who sail the easterlies, even today....I originally ran across this term in the Navy....so it has by no means died out, just as "Down East" is still with us.

I think that members of the shell club should have a working knowledge of some sailing terms, because they can help immeasurably in understanding the winds, which affect marine currents and biological distributions, especially if they research old sailing accounts and logbooks for malacological information

Sincerely,

Don Kuntz

Look at things closely enough to enjoy them. Because the longer and harder you look at any living creature, the more marvelous you find it to be.

READERS DIGEST, June 1965
Contributed by Corinne Edwards

ADDITIONS TO THE CLUB LIBRARY

Five scientific papers published during 1970:

"Descriptions of Two New Species of Cone Shell from the Philippines and Taiwan" (Rhizoconus coralinus and Asprella memiae) by T. Habe and S. Kosuge. (Ill.)

"Tarantellaxis kuroharai n. gen. et sp. (Rapidae, Gastropoda) from from Japan by T. Habe. (Ill.)

Descriptions of Three New Gastropods from the Sea around Midway Island" (Euchelus midwayensis/Trochidae; Galeosastrea midwayensis/ Turbinidae; Claviscala midwayensis/Epitoniidae) by T. Habe and S. Kosuge. (Ill.)

"On the C^{14} Age Estimation of Shell Fossils Taken from the Tsushima Trough and its Geological Significance" by T. Habe and S. Kosuge. Only the summary is in English. (Map; ill.)

"Land and Freshwater Mollusks of the Tsushima Islands between Kyushu and Korea" by T. Habe and S. Kosuge. Only the summary, chiefly a checklist, is in English. (Ill.)

Four reports on study groups sponsored by the Wellington, N. Z. Shell Club during 1970. Subjects:

N. Z. Land Snails of the Family Endodontidae Pilsbry

Family Pectinidae

New Zealand Veneridae

Family Tellinidae

Checklist of mollusks known to occur in both Australian and New Zealand water.

MORE QUOTES FROM KIDS

If you liked the elementary-grade approach to the history and the mysteries of the sea that were quoted from OCEANS Magazine in NOTES No. 166 (It's Better the Way Kids See It, p.7), you should be similarly edified by these additional ones:

A youngster who must have read "Tom Swift and His Electric Fossil Shell" confesses, "The oceans have been here since 600 million, but I forget whether it was A.C. or D.C." Another, who sees the subject in perspective, observes, "Compared with the ocean, people have been living on the earth for only a drop in the bucket."

And there's a young prophet of doom who could be warning our continent-hopping brother, Tony D'Attilio. He predicts, "California will be completely under the ocean in a few million years. Just wait and see." (Don't alarm Rose, Tony.)

NYSC NOTES   NUMBER 170   MARCH 1971

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The NEW YORK SHELL CLUB meets on the second Sunday of each month September through June, in

ROOM 319, AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: Sunday, APRIL 18, 1971, at 2:00 P.M.*

NOTE: THIS IS THE THIRD SUNDAY OF THE MONTH. THIS MEETING WILL NOT BE AT THE AMERICAN MUSEUM OF NATURAL HISTORY. IT IS THE YEARLY SOCIAL MEETING AND WILL BE HELD AT:

BROADWAY DANCE STUDIO (Phone: AS 4-1503)
31-08 BROADWAY
ASTORIA, QUEENS, N. Y. (Directions below)

THE NEW YORK SHELL CLUB SOCIAL

This yearly gathering is a good chance to meet and get to know your fellow members, and discuss your latest collecting trip or newest shell acquisition. Food and drink will be served, a choice of mixed drinks, "soft" punch, and a lavish cold buffet.

We hope to make the party self-supporting. Therefore, a cover charge of $3.00 each for members and guests, and $1.50 each for children under 12, will be assessed at the door.

Remember, that your donations of shells and related items are needed to make the affair a success. No item is too large or too small. Bring them in early so that they may be displayed -- *doors open at one o'clock.-- Meeting starts officially at two.

A film program, auction, and bargain table will be featured, as well as a lot of good company. Come one and all, bring your donations for the auction as well as your appetites, and enjoy!!

DIRECTIONS: The studio is on the 2nd floor of the building, corner of 31st St. and Broadway. From Manhattan, B.M.T. subway, ASTORIA line to the Broadway stop and you're right there! I.R.T. FLUSHING line to Queensboro Plaza, free transfer to B.M.T. ASTORIA line. From Jamaica, IND. subway to Roosevelt Ave., free transfer to I.R.T. Flushing line, transfer again to B.M.T. ASTORIA line at Queensboro Plaza. BY CAR: Queensboro Bridge to Northern Blvd. to 31st Street (under the El) to Broadway. Or Triboro Bridge to the first exit in Queens, turn right under the Elevated along 31st Street to Broadway. From Long Island, Grand Central Parkway to the last exit before the Triboro Bridge, a short distance along Astoria Blvd. to 31st Street, turn left under the El to Broadway (about 6 blocks). Queens and Brooklyn residents should have no trouble. However, if there are any questions you may telephone NE9-2559 (Raeihle), AS4-1503 (Jensen), or MO3-5871 (Hulswit).

We once again express our deepest appreciation to Dorothy Jensen for making her studio available to us!

GUNNAR THORSON

We regret to report the death of Professor, Dr. Phil. Gunnar Thorson, who died on the 25th of January at the age of 64. An eminent malacologist, he was founder and first director of the Marine Biological Laboratory at Helsingør, Denmark.

At the time of his death Professor Thorson was still amassing material for his "World Monograph on the eggs and larval development of Prosobranchs", a tremendous work that he had planned to publish within the next few years. It was through correspondence concerning this work that many amateur observers became acquainted with him; we will miss his enthusiasm and encouragement.

dr

JAMAICA BAY WILD LIFE REFUGE SAVED

The Editorial Staff notes with considerable satisfaction that the proposed extension of the Kennedy Airport runways into Jamaica Bay has been finally rejected. Many people and organizations spent much money and efforts to bring this result about. Most credit must go to the Park Council who prepared an exhaustive report on the damage the runways would cause to the wild life of Jamaica Bay. The New York Shell Club members -- as individuals! -- did their share by collecting large numbers of signatures to petitions. That unique wild life refuge within the bounds of the world's largest city is now preserved for future generations.

NOTE ON SYMBIOSIS BETWEEN FISH AND MOLLUSK

It is common knowledge that fresh-water mussels have to pass part of their immature life stage as parasites imbedded shallowly in the tissues of fresh-water fish. It is not so commonly known that there is a species of fish (Rhodeus amarus) from central Europe which, to a degree, reverses the process. It uses a fresh-water mussel (Unio) to incubate its eggs.

Dr. Luis Howell Rivero, a prominent Cuban zoologist and malacologist, reports the case as follows (1945, Revista de la Sociedad Malacologica 'Carlos de la Torre,' vol. 3, pp.111-112): "The female, by means of its ovipositor, deposits its eggs in the mantle cavity of the mollusks... The inflowing water current then introduces the semen of the accompanying male into the mantle cavity. The eggs which are thus fertilized adhere to the branchia (gills) of the mollusk till they are completely incubated. The fish larvae are then expelled by the excurrent flow of water." (Translated).

In the same article Dr. Rivero also cites numerous examples of small fishes, especially of the family Apogonidae, living, perhaps symbiotically, in the mantle cavities of Strombus gigas and S. raninus.

MKJ

THE RECENT SPECIES OF PLEUROTOMARIA

Nick Katsaras

There are 15 described Recent species of this most fascinating family. Below I have listed these names. I will then say somethin about the more interesting ones.

quoyana Fischer & Bernhardi 1856, Gulf of Mexico

adansoniana Crosse & Fischer 1861, Caribbean

beyrichii Hilgendorf 1877, Japan

rumphii Schepman 1879, Eastern Asia

salmiana Rolle 1899, Japan

hirasei Pilsbry 1903, Japan

africana Tomlin 1948, South Africa

teramachii Kuroda 1955, Japan

amabilis F. M. Bayer 1963, Gulf of Mexico, Caribbean

midas F. M. Bayer 1965, Florida Straits

lucaya F. M. Bayer 1965, Florida Straits

gemma F. M. Bayer 1965, Florida Straits

pyramus F. M. Bayer 1967, Guadeloupe Id., Lesser Antilles

atlanticus Rios & Mathews 1969, Brazil

notialis Leme & Penna 1969, Brazil

The largest is *rumphii* which, I have been told, reaches a diameter of 12 inches. I saw some in Sanibel and Ft. Lauderdale which were large though not quite that large. The smallest is *pyramus* which is only 48 mm (less than 2 inches) wide and 34 mm (1-1/4 inch approx.) high, about the size of an ordinary *Calliostoma*. Two other small species are *lucaya* and *gemma*, the latter being the larger of the two. *P. gemma* is such a rare shell that when Dr. R. T. Abbott picked a specimen at the St. Petersburg Shell Show last year for a prize, people were astonished because the specimen was a shell with a big break in it. However, it deserved the prize because of its rarity.

It is not easy to discuss the comparative rarity of species of shells. However, I have been interested in the *Pleurotomaria* for such a long time, and have had so much experience with them, that the following remarks regarding their rarity may prove of some value and interest.

The rarest are the following: pyramus, atlanticus, and notialis, all of which are known only from the single holotype. P. midas is known only from three specimens, one in the U. S. National Museum, one in Miami, and one in southern Florida. I list the next nine in what I think is the order of their rarity: lucaya, gemma, amabilis, quoyanus, salmianus, beyrichii, africana, adansoniana, and teramachii. P. rumphii was very rare a few years ago, but more specimens have turned up since then. The commonest species by far is hirasei.

Of the 15 species known, the most beautiful in my opinion is midas. It is about the size of hirasei but has a beautiful golden color and a graceful, domed spire. It is probably the most costly shell known. P. rumphii is also very handsome. It is quite large and has a striking pyramid-like appearance. The "low" type of teremachii, with its pleasing shape and warm reddish color is also quite pretty. P. adansoniana has a remarkably long slit going almost all the way around the shell.

There is some confusion about P. teremachii. Collectors know two varieties of this species, a low variety and a high variety. William Old thinks the low variety is actually africana, while the high variety is the true teremachii. Other students believe that the teremachii from Taiwan is a still undescribed species.

EDITOR'S NOTE: Mr. Katsaras showed us a large but unfortunately rather badly damaged specimen of a Pleurotomaria. This shell had an interesting history. It was lent by Mr. and Mrs. Hugh Stix to David Frost for one of his television shows. During the taping of the show, someone threw a soccer ball to Mr. Frost. Mr. Frost missed the catch and the ball hit and damaged the rare shell. It had been insured previously by Brentano's Fifth Avenue store for $2,000.00 while it was on display in the front show window. Mr. Katsaras obtained the shell from the Stixes.

E. LAURENCE PALMER

Word has been received of the recent death of E. Laurence Palmer, of Ithaca, New York. He was associated with the New York State College of Agriculture at Cornell University, Ithaca, where he had served for many years as Professor of Rural Education.

Dr. Palmer was an ecologist and conservationist; his concern over damage done to the environment in the name of "progress" is evident in his writings. His "Field Book of Natural History" (McGraw-Hill, New York, 1949) is a well-known work; his "Shell-Bearers" (Cornell Rural School Leaflet, Vol. 42, No. 4) is an introduction to land and freshwater mollusks, their life histories, and their places in the ecology.

We mourn his passing. Our deepest sympathy is extended to his wife, Katherine van Winkle Palmer.

THE GENUS THAIS IN THE WESTERN ATLANTIC

Marian S. Hubbard

Thais is a muricid snail, family Muricidae, subfamily Purpurinae. It is closely related to Purpura and to the oyster drills. It is a genus of shallow-water, generally rock-dwelling snails. There are 9 species and subspecies in the Western Atlantic, and only five of these can be found in the United States. Thais is carnivorous, and, like most Neogastropoda, it has relatively large, strongly cusped teeth on the radula. All muricids are said to have an accessory gland for boring, but some authors doubt that the secretion softens the shell being rasped by the radula. In Florida one is likely to find Thais haemastoma floridana, rustica, and deltoidea. Along the Gulf of Mexico to Texas one will find T. haemastoma haysae. Thais lapillus - the dog whelk, common whelk or dog periwinkle - is the only cold-water species. It is quite different from the others. More has been written about it than about all the others together.

In the western Atlantic, it is found from Long Island northward, to northern Newfoundland and on the Gaspé Peninsula. It has three times this range in the eastern Atlantic, from Norway all the way to Portugal. It is probably restricted in America by the cold Labrador Current in the north and unsuitably sandy beaches from Long Island southward.

The shell grows to about 1-1/2 inches in height in the western Atlantic, to about 2-1/2 inches in the eastern Atlantic. Specimens found living in sheltered areas are generally larger than those found in exposed areas. The former are generally more high-spired and narrow mouthed. (Newell, citing Staiger, says they are interfertile forms that differ in chromosome count. -ed.) The sculpture of Thais lapillus is extremely variable. Sometimes the shell is smooth, or has only a few ridges or growth lines. Generally, there are numerous rounded, spiral ridges. Some specimens exhibit a series of imbricated scales, arranged in an axial pattern over the entire shell or only over certain portions. Imbrications could be an inherited factor because not all shells in sheltered areas have them. Clench 1947, p.89) cites Labbé as saying embryos are imbricated in the egg capsule and retain or lose these imbrications after their escape from the capsule. It is obvious that fine leaf-like foliations would be worn down by wave action on a rocky shore. The variety imbricata is found in shallow mud flats.

The color of Thais lapillus is generally a dull, yellowish white with variations of yellow, orange or brown, diffused or in the form of bands on a white background. I have collected some with a purplish tinge. The striped ones I have seen are juveniles; most adults are white or gray. Light-colored shells are found more on barnacle-covered (light) rocks and dark-colored forms are more numerous on darker-colored rocks where Mytilus edulis, the blue mussel, is plentiful. Moore (1936) presents considerable evidence that coloration is due to food, except in the case of orange pigmentation. Specimens

eating barnacles are lighter than those eating mussels, and the color of new growth can be changed by changing the diet of snails in the laboratory.

Although Thais eats mostly barnacles and blue mussels, it will take other food. I read in the literature in one place only that they will try to eat Littorina or even their own kind, but rarely succeed. I have in my collection one specimen that looks as though another Thais started to drill a hole, but gave up before he got halfway through. Moore found that in the laboratory juveniles will eat Spirorbis borealis, a polychaete worm.

In Thais the sexes are separate. I have found information on only three species - haemastoma floridana, haemastoma haysae, and lapillus - plus the west American Thais lamellosa. In all these, the female lays eggs in horny capsules attached separately to the substrate, but often clustered together. There are differences between species in the amount of development in the capsule. Thais haemastoma haysae hatch as veligers, and can swim around for a time before settling down. Thais lapillus hatch as crawl-away snails. This difference is important in that the veliger stage permits much wider distribution of the young. For Thais lapillus, mating can occur all year long, but seems to be mostly in the period of January through April.

Although there are about 300-400 tiny eggs in each capsule, only about 8 to 14 young leave each capsule. The first to hatch, feed on infertile "nurse eggs". There is conflicting information in the literature as to whether or not they actually "cannibalize" their fellows. Moore (1938, p.65) cites Pelseneer (1905) as saying the eggs take about four months to hatch. Since each mature female is thought to lay about 200 capsules a year, it is obvious that the mollusk is itself subject to a good deal of predation. Pollack and other fish appear to be the chief predators, at least of the juveniles, which are only 1.3 millimeters high when they hatch. Gulls also eat them and later regurgitate the shells.

Concerning the origin of Thais lapillus, Kincaid (1964) says that during the Pliocene, gastropods of the Nucella type appeared suddenly in the Atlantic without any antecedent forms. This indicated a migratory origin from some other area and also suggested that the migration must have come from the Pacific, where such forms were abundantly represented.

Literature cited:

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ADDED NOTE ON THE NAME OF THE LOCAL DOG WHELK

In the previous number of NOTES (No. 169, p.5) the conclusion was reached that the local dog whelk should be called Nucella lapillus and not Thais lapillus. This point was also discussed by Clench (1947, Johnsonia, No. 23, p.86) and by Rehder (1969, Nautilus, 75:109-111). The question was never whether lapillus needed a generic placement other than in Thais. Both writers agreed that it did. The problem concerned the generic name which was legally available for the species lapillus. This in turn hinged upon a proper type-species designation.

We need not go into the more abstruse parts of the discussion. Briefly, Clench rejected the name Nucella, because, as he stated, the figures given by Roding, the author of Nucella, "do not refer to any species of Thais as now understood". Rehder disagreed. He thought the figures were recognizable. To prove his point he reproduced the illustrations in question (op.cit., pl. 10, figs. 3-4) and also showed the illustrations of a specimen of lapillus collected in France, which he had found in the U. S. National Museum, (ibid., figs. 1-2). The two sets of illustrations look startlingly alike and both without question refer to lapillus. Hence it would appear that the genus Nucella is well established with a legally cited and properly identified type-species. The local species thus must be called Nucella lapillus.

Dr. Gunnar Thorsen, whose loss to science we commemorate in this issue, reported on an interesting species of Clanculus from Teneriff (1967, Zeitschrift Morphologie Oekologie Tiere, vol.60, pp. 162-175). This species, called Clanculus bertheloti Orbigny 1839, lives in the very violently agitated wave zone among lava boulders. Dr. Thorsen called it "ein Hexenkessel von Schaum und Strudeln." The force of the water, especially at high tide, presumably is so great, that the snail cannot safely entrust its egg capsules to the surface of the wave-washed rocks. Hence it has evolved its own method of egg deposition.

The shell, like many Clanculus species -- the best known one is probably the strawberry shell (C. pharaonis Linnaeus) -- has a surface closely covered with numerous beadlike, regularly arranged tubercles. It is among these tubercles that the snail deposits its eggs and among which the young spend part of their early life, riding piggy-back like the young scorpions on their mothers' backs. The eggs are further protected by a strong mucus sheath with which the animal covers its egg carrying shell.

Specimens are not easy to find even where the species regularly occurs. It can be sought for at low tide when the "Hexenkessel" becomes quite calm and smooth. The snails live on the under-surface of large lava boulders. Dr. Thorsen reports that one has to turn over and examine some 200 good sized boulders to obtain a mere 15 specimens.

MKJ

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The NEW YORK SHELL CLUB meets on the second Sunday of each month September through June, in

ROOM 319, AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: Sunday, MAY 9, 1971, at 2:00 P.M.

PROGRAM: Karl Jacobson -- The second of a series of lectures on malacology. This month: "Archeogastropoda and Torsion".

Robert A. Fox -- "Underwater Collecting in San Andres". This locality is a tiny island west of Colombia and east of Nicaragua in the Caribbean, relatively unknown until recently.

The 1971 Social meeting was an extremely successful one, with a wealth of really fine shells donated by the members, bid on by the members at auction, and directly benefitting the members by raising a rather substantial amount over and above the overhead cost. All donors of auction material are warmly thanked by their fellow members. The profit, the exact amount of which will be reported at the next meeting, will assure us of many interesting programs at future meetings. I, on behalf of the club, heartily thank those many members who gave of their time to help make this meeting so successful. Above all, thanks are once again given to Dorothy Jensen, who allowed the club the use of her spacious dance studios.

37TH ANNUAL AMU MEETING -- JULY 15-19, 1971

Headquarters for the coming meeting of the American Malacological Union will be the Quality Motel, 900 N. Atlantic Ave., Cocoa Beach, Florida 32931. (Rooms $16.00 double, $12.00 single.)

The planned schedule begins with registration Thursday morning, the 15th, with daily daytime sessions through Monday, July 19th, presided over by President David Stansbery of Columbus, Ohio. Plans for evening hours include films, slides, Shell Club Night, a beach party, and banquet. Special events: an island picnic ($5), a tour of the Treasure Museum ($1.25). Field trips Tuesday, July 20th, offer a choice of: An ocean diving trip for certified divers ($12) who are requested to bring their own regulators; fresh water collecting in Lake Washington ($3.00); local collecting from Cocoa Beach to Sebastian Inlet (no charge).

Registration $7 to June 15, thereafter $10, includes group photo. Banquet $8, children under twelve years $4. Advance registration is requested. Fees should be mailed to Mrs. Richard Severance, Registration Chairman, 785 S. E. Badger Drive, Palm Bay, Florida 32901. Checks should be made payable to "AMU MEETING '71".

Those of you who have attended previous meetings need not be told that these annual gatherings are the highlight of each year. Plan to attend -- you need not be a member!

dr

HORACE BURRINGTON BAKER

The sad news has reached us that Dr. Horace Burrington Baker passed away March 11 in his home in Havertown, Pennsylvania. He was 82 years old. During his long professional life he was associated mainly with the University of Pennsylvania and the Academy of Natural Sciences.

Dr. Baker was one of the outstanding malacologists of the twentieth century. His chief work was done on the land pulmonates, and in this field his exquisite anatomical and radular drawings are unique for accuracy and technique. His researches led to several fargoing revisions of the concepts of pulmonate systematics. One of his most important contributions to the science was his introduction of the infraorder Holopodopes in the order of sigmurethran pulmonates. He collected extensively in Jamaica, Mexico and the Greater and Lesser Antilles. Each one of his expeditions resulted in an important contribution to the literature of the malacology of that area.

Among his other extensive studies is his work on the "Zonitid Snails from the Pacific Islands" published in four parts by the Bishop Museum of Honolulu (1938-1941). He did this work during a seven month stay in Hawaii.

Because of his patient labors, his ready insights, and above all his talent for sound synthesis, Dr. Baker's influence will be strongly felt in all future studies in the fields in which he worked.

mkj

MARCO POLO in Book 2 Chapter 20 of his Travels tells how divers of ancient times were protected from "large fish." "In consequence of the gulf being infested with a kind of large fish, which often prove destructive to the divers, the merchants take the precaution of being accompanied by certain enchanters belonging to a class of Brahmans, who, by means of their diabolical art, have the power of constraining and stupefying these fish, so as to prevent them from doing mischief; and as the fishing takes place in the daytime only, they discontinue the effect of the charm in the evening; in order that dishonest persons who might be inclined to take the opportunity of diving at night and stealing the oysters, may be deterred by the apprehension they feel of the unrestrained ravages of these animals."

MOLLUSKS INTRODUCED BY MAN IN THE NEW YORK CITY AREA

Morris K. Jacobson

Several of the foreign mollusks introduced into the New York City area have been here for such a long time that they can almost be regarded as native -- like the English sparrow and Queen Anne's lace. Some appeared on the earliest faunal lists and probably arrived on our shores with the first Dutch settlers. But some are more recent importations.

SHELLED LAND PULMONATES

The English garden snail (*Cepea nemoralis* Linnaeus). This is the handsomest land shell in our area. Its yellow or rufous ground color usually ornamented with one to five brown color bands make it stand our among our drab horn colored native land snails. The first importation was deliberate. W. G. Binney imported a hundred living specimens from Sheffield, England in 1857 and freed them in his garden in Burlington, New Jersey. The first published New York record seems to be that of Henry Prime in 1894 (Nautilus, 8:70) who found it in Flushing, Astoria, and Lloyd's Neck. Other records have appeared since, including Malverne, Rockaway Beach, Hollis, Greenwood and Cypress Cemeteries. (See Jacobson & Emerson, Shells of New York City Area (SNYCA) for description and more discussion).

Foster's forest snail (*Triodopsis fosteri* F C Baker). This is native to the Midwest USA. In the 1860's Binney transferred some specimens to his garden in Burlington, New Jersey. I visited Burlington in the 1950's and brought back a few dozen to my back yard in Rockaway Beach. They are the commonest snail there now. As far as I know, this is the only New York City record. The shell resembles that of the three-toothed forest snail (*T. tridentata* Say) (SNYCA, p. 4) but has a longer parietal tooth and much weaker palatal teeth in the aperture.

The cellar snail (*Oxychilus cellarius* Müller). This is an old inhabitant in our area. DeKay reported it in 1843, and Prime in 1894 found it in Astoria. I have taken it in many lots in Brooklyn. For description of this and the two following species and more data see SNYCA, p. 14.

Draparnauld's cellar snail (*O. draparnaldi* Beck). This looks a good deal like *cellarius* but it is larger and has a more open umbilicus. There is a series of this species in the W. T. Davis collection in the Staten Island Museum which were taken at Ft. Wadsworth, Staten Island in 1911. It was probably here earlier but I could find no other records. I found some specimens in Ft. Tryon Park in Manhattan and at the Voorleezers house in Richmondtown.

The garlicky cellar snail (*O. alliarius* Müller). This resembles the other two species of *Oxychilus* but it can be identified by the strong garlic odor when it is irritated. Pilsbry reported it from Brooklyn, but I have been unable to date this record.

The European disc snail (*Discus rotundatus* Müller). The first New York City record was made in 1951 when it was found in Ft. Tryon Park. Since then it turned up in Great Neck, Union City, New Jersey, Rockaway Beach, and Van Cortlandt Park. It looks like the native disc snail (*Discus cronkhitei* Newcomb) but differs in having pretty flame markings on its shell (SNYCA, p.16). A healthy colony is flourishing in my back yard.

PULMONATE SLUGS

The gray European garden slug (Limax maximus Linnaeus). This species was first noticed in Philadelphia in 1867 and the first New York record is from Long Island in 1870. It is easily recognized by its large size (up to 6 inches when it stretches out) and its back decorated with large black irregular spots. It is very common everywhere in favorable locations. There is a small thin, roughly oblong shell plate just beneath the skin on the back.

The yellow European garden slug (*Limax flavus* Linnaeus). This is almost as large as *L. maximus* from which it is most easily distinguished by its yellowish gray color and the orange colored mucus which it exudes when annoyed. DeKay in 1843 reported it in gardens in New York. In 1894 Henry Prime found it in Huntington and Brooklyn and in 1962 Harold Feinberg (NYSCN 83:6) reported a colony at Broadway and 226 Street in the Bronz. It is far less common than *maximus*.

The reticulated slug. (*Deroceras reticulatum* Müller). This species, under the wrong name *Limax agrestis* Linnaeus, frequently appeared in older lists. It is mentioned by DeKay (1843) without locality, and by H. Prime from Jamaica, Brooklyn, Huntington, and Centerport. Feinberg reports it as "common" in the Bronx. It resembles the native slug *D. laeve* but, according to Pilsbry, it is more strongly marked and "always readily separable...by its viscid, milky mucus."

FRESH WATER PULMONATES.

The ear-shaped pond snail (*Lymnaea auricularia* Linnaeus). Silas Wheat reported it in the lily ponds in Prospect Park in 1907. There are no records of it recently and perhaps it does not exist in our area any more. But it can turn up at any time since it is quite hardy and flourishes in northern Europe. Club member Taxson reports that he saw specimens in Bronx Park in 1961.

FRESH WATER OPERCULATE SNAILS.

The lined mystery snail (*Viviparus georgianus* Lea, formerly *V. contectoides* Binney). This shell is common in the Midwest and in upper New York State, but has never been reported in our area till it turned up in the 1950's in Central Park Lake where it frightened a reporter of the New York Times. I also found it in Oakland Lake, Bayside, Queens. It probably got there when a youngster returning from an upstate camp dumped some animals or weeds in Central Park. (SNYCA, p. 35).

The oriental mystery snail (*Vivaparus malleatus* Reeve). This snail first appeared in California and quickly spread throughout much of the northern part of our country. We found it in many ponds in the New York area, (SNYCA, p.35).

The two-keeled valve snail (*Valvata bicarinata* Lea). This is also native to the Midwest but has never been reported from New York. Mr. Harry Fertik of Bayside found a small colony in Oakland Lake, Bayside, Queens. It is the only *Valvata* ever reported from Long Island. Edwin W. Humphreys reported a related species (*tricarinata*) as fossils at 171st Street and Morris Avenue in the Bronx in 1909. The two-keeled valve snail is about 1/4 inch in diameter, and has two prominent keels at the top of the whorls. (see *tricarinata* in SNYCA, p.37)

The faucet snail (*Bithynia tentaculata* Linnaeus). This small elevated snail can be found in many brooks near Peekskill, N. Y. (See SNYCA, p.36 for a fuller account).

In addition to these mollusks which have survived and even flourished in our area, there are some that pass through but never stay on, except occasionally in hothouses. Millions of European land snails are imported every year in New York and are sold alive at Italian markets. (See SNYCA 106-110). Our climate is too severe for them to survive if they escape, but some have established themselves in other parts of the country. (NYSCN, 168:6,7). In the hothouses can be found *Lamellaxis gracilis* Hutton which was discovered there by our late member Dr. Edward Karlin. Harold Feinberg reported finding two related species, *Opeas pumilum* Pfeiffer and *Lamellaxis mauritianus* Pfeiffer in potted plants in the Bird House of the Bronx Zoo. As Harold writes: "these cannot claim a place on our local faunal list."

FLORIDA'S POLLUTION PROBLEM

Grace McDougall

In the April issue of Skin Diver magazine appears a startling account of what is happening to the lakes, rivers and ocean in Florida. Scientists give Florida five years - 20 at the most - before the entire southern half of the state is lost to pollution. Destruction of vital nursery grounds will eliminate three-fourths of the game fish and reef fish of the Keys, all the way to the Tortugas, and the disease is threatening to wipe out coral reefs from Miami to Key West. South Florida is already threatened with a water shortage which will become critical by 1976. The article describes the major cause of this pollution and suggests a cure.

Every big city has its sewage problem - and when situated on a coast line it uses the water to dispose of it - therefore the cities of Miami and North Miami are spilling into the Atlantic more than 50 million gallons of raw, untreated sewage EVERY DAY of the year! It

covers 12 acres of ocean bottom with filth ten inches deep, and the balance floats to the surface and is circulated back to shore! The same story is true of most of the Atlantic seacoast from Palm Beach all the way to Jacksonville. In a few cases the water is posted that it is unsafe for swimming, but in most areas the city fathers are more concerned with the tourist dollars than the health of their citizens and signs are omitted.

The lakes of Florida provide more symptoms of the same disease. A day of skin diving in a lake near Orlando, 200 miles from Miami, resulted in an incurable disease in a teenager, and his death. Pollution represents only one phase of the disease - the second is water quantity. All of Central and South Florida fresh water comes from rainfall, none is supplied from surface rivers from other states. The underground reservoir cannot be mined since lowering the fresh water level would permit sea water to flow inland, and South Florida would soon be drinking brackish water. The Army Corps of Engineers in a report to Congress in 1968 stated that South Florida will suffer a critical water shortage by 1976. Ironically, the Corps and Florida Flood Control District are directly responsible for most of this shortage, and have created some of the serious water problems which are already showing up.

The article is long and should be read in its entirety by every interested person, expecially those water lovers and shell collectors who make Florida their vacation paradise - a paradise that is being destroyed by man-made pollution. The next question is what can anyone do about it? There is a bill introduced by Congressman Reuss -- H. R. 10316 stating: A BILL TO AUTHORIZE AND DIRECT THE CORPS OF ENGINEERS TO ENGAGE IN PUBLIC WORKS FOR WATER PURIFICATION AND REUSE." This would go a long way toward solving water pollution problems in every city and state in the nation -- not just Florida! However, since the Corps is notorious for their disregard of ecology, it would be well to have them work under the FEDERAL WATER QUALITY ADMINISTRATION to make sure the billions of dollars go directly to work to purify the waters, and put a stop to this senseless rape of our country. Write to the President, your State Senators and Representatives about this -- let them know your concern -- letters do count but everyone must act, not just a few. This bill so far has lain dormant and unnoticed. Your letters advocating its passage into Federal law will bring it to life. Florida is such a beautiful State - let's save it so that our children and their children can enjoy it as we have.

The Tidewater Shell and Fossil Club of Norfolk, Virginia announces that their second annual Shell Show will be held at The Village Gallery, College Park, Virginia Beach, Virginia from April 3 to May 9.

Bill Old

BOOK REVIEW

THE SYSTEMATICS AND ZOOGEOGRAPHY OF THE UNIONIDAE OF THE SOUTHERN ATLANTIC SLOPE REGION, by Richard I. Johnson -- Bulletin of the Museum of Comparative Zoology, Cambridge, Massachusetts 02138. Vol. 140, pp. 263-450, 22 plates, 5 textfigures. Price: $10.00.

This is one of the relatively few monographs of recent times that is limited to the fresh-water mussels or naiads. Since the monumental labors of Charles Torrey Simpson (1914) and Arnold E. Ortmann (1919), few true monographs of these important organisms have appeared. And in view of the rapid disappearance of many races and even species of naiads in the increasing pollution of our waters, the present monograph is doubly welcome. There will probably be little chance to conduct such a study again.

But the monograph in itself is a laudable and painstaking study of this fauna. The descriptions are thorough, the identification keys most useful, and the figures excellent. Many problems of nomenclature and determination are clearly resolved. Mr. Johnson, moreover, not only presents a complete synonymy of all these badly overnamed mollusks, but gives the location of all pertinent type-material, and in some cases even offers photographs of some of the more problematical taxa. How much of an effort went into this can be seen from the fact that the single species Elliptio complanata Lightfoot has been renamed no fewer than 101 times!

The four species of our local naiads are mentioned in this study.

In addition to the systematic part, Mr. Johnson, in six introductory chapters, presents a fascinating account of the zoogeography of these naiads and the geological history which explains their present day distribution. The conclusion of the author is that the unionid fauna of the Atlantic slope region is "of Interior Basin origin, but on the Atlantic slope the species are smaller and are neutral in color. Yet, the only two species of Unionidae with true spines, Elliptio spinosa Lea and Pleurobema collina Conrad, occur here."

The naiads are not very popular among most shell collectors. Few of them are beautiful enough to catch the eye as Mr. Johnson suggests in the above quotation, and many are truly sad looking objects. But this reviewer can testify that when the naiad bug strikes, it goes far toward making one a absolute fanatic. Dr. Clench has stated more than once that nothing he can think of beats the pleasure of unio collecting. Many others feel the same way.

For the naiad enthusiast as well as for the general shell collector and for anyone interested in America's native fauna, this study must be an important addition to his library.

Morris K. Jacobson

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The NEW YORK SHELL CLUB meets on the second Sunday of each month September through June, in

ROOM 319, AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: Sunday, JUNE 13, 1971, at 2:00 P.M.

PROGRAM: Karl Jacobson -- "Malacology for the Shell Collector" -- Review of the Archaeogastropoda and an introduction to the Neogastropoda.

William E. Old -- "A Galapagos Expedition - Part I"

Shell of the Month -- Dupuy Greer.

ANNUAL ELECTRIONS OF OFFICERS --

Please send nominations to the Nominations Chairman, Edward E. Cowles, 12 Hillcrest Avenue, New Rochelle, New York 10801. New terms for the offices of Vice President, Corresponding, and Recording Secretaries, are particularly vacant this year.

ANNUAL FIELD TRIP

Orient Beach State Park on the northern tip of Long Island -- Saturday, June 19th at 12 Noon. We'll meet at the picnic area. The low tide is at 1:30 P.M. Bring sneakers, the beach is pebbly, and, of course, bring your lunches.

If you need a ride, please call Veronica Johns at LE 2-8690; also, if you can offer a ride. Veronica has once again agreed to serve as a clearing house.

QUESTION: In keeping a small octopus in captivity in an aquarium, what would be the best food for it?...

The best food for octopuses is small live crustaceans, preferably small crabs. Young blue crabs are ideal and can be obtained during the summer along the shore without much difficulty. Fiddler crabs and shrimp may also be used. If live food is not available, fresh dead shrimp or fish will often be eaten, especially if introduced into the tank with forceps or dangled on a piece of string to give it movement. Some octopuses take dead cut-up pieces of seafood without qualms but, like humans, they are variable in their likes and dislikes.

(SEA SECRETS VOL. 8 NO. 4 APRIL 1964)

A SMALL OIL SPILL

Mathilde P. Weingartner

(Review of an article in Environment, Publication of SIPI (Scientists' Institute for Public Information) March 1971, by Max Blumer, Howard L. Sanders, J. Fred Grassle and George R. Hampson.*)

Oil wells have spouted oil into the sea, tankers have collided and foundered on beaches, rock, and reef, refineries have had spillages, until Heyerdahl discovered on his raft voyage a cover of oil on the sea from horizon to horizon.

Often the damage to the environment has been pooh-poohed, and even scientists have stated that the lighter oils dissipate readily and bacteria degrade even crude oil to non-toxic substances.

Most life in the oceans occurs along the shallower portions of the sea, the continental shelves etc. and this is of course where oil drilling is done, where sea lanes converge, and where tankers may founder on rocks. Hence this is where the damage to the environment is most severe. However, this should not excuse the flushing of tanker holds at sea.

On September 16th, 1969 an oil barge went aground off Fassets Point, West Falmouth, in Buzzard's Bay, Massachusetts, just off Woods Hole Oceanographic Institution, giving this scientific community a fine chance to study the damage such a spill can cause.

It was only a small spill, 650 to 700 tons of #2 fuel oil, which compared to other spills is a small quantity and a lighter oil than crude. It disperses more rapidly and disappears from sight. The oil was carried by wind, wave and tidal action up and down the coast and into the estuaries and marshes, where the sediment was contaminated to a depth of two feet. Death to all life forms occurred almost immediately in the area of the spill, and spread out, as time passed over 5,000 acres at sea and 500 acres in the estuaries and marshes. Oil was recovered from sediments 42 feet below the surface. As plants and animals died, the cohesion of the bottom sediments was lost and erosion carried the pollution 2-1/2 miles from the original spill.

With sensitive analytical techniques, the staff at Woods Hole determined that acutely toxic hydrocarbons remain within the bodies of animals that were at the periphery of the spill for at least as long as 16 months and maybe until their death. Blue mussels that were juveniles when the spill occurred, did not reproduce during the following year, as those in a control area did. The toxins are concentrated in the food chain of marine life, and will not be washed out by keeping the animals in non-polluted water for months.

From an economic point of view, the shell fisheries at Falmouth have suffered an almost fatal blow. They received from the oil companies $100,000 for the loss of the first year, which was estimated at $118,000 at the time. Sixteen months after the spill the oily bottom sediments and toxic hydrocarbons are still around, very little

having been degraded by those bacteria which are supposed to take care of the environment.

Fish, being more mobile and migratory are less affected by the oil pollution, and frequently, if a study is made and the fish in the area are not severely damaged, it is assumed that not much damage has happened to the environment. However, the same does not hold true for the more sessile forms of life.

Earlier studies of the environmental effect were of short duration and took into account only the visible damages. At Woods Hole more detailed studies of longer duration have proved that crude oil and its products are persistant poisons, which enter the marine food chain, may even pick up pesticides such as DDT, and can be passed from prey to prey, even to man himself. The large number of oil spills, and the large quantity of oil thus released into the marine environment can be a real threat to life in the oceans and to man. The pity if that most of it could be avoided with better navigation practices, care in loading and unloading, proper installation of protective measures at drilling platforms, and the stopping of flushing oil tanks at sea.

*The authors are members of the staff of Woods Hole Oceanographic Institution, Woods Hole, Massachusetts.

LAND SNAILS ALIVE AT HOME

Marian S. Hubbard

"Land snails alive at home", I thought to myself when I found two live snails under rocks near our summer cottage in Vermont. It was late spring, 1970, and the thought was exciting to me. I brought the snails home to Long Island and improvised a terrarium from the bottom of an old cookie tin. I put in a layer of dampened forest floor from Vermont, a caucer of fresh water, and some powdered lime for calcium. It set out a "buffet" of lettuce, cabbage and celery leaves. The snails liked all three and they ate the lime like ice cream -- eagerly and in quantity. I doubted that they would wander far from food and moisture, but I did put a piece of plastic wrap over the top and anchored it with a rubber band around the tin.

The snails were both Triodopsis. The smaller one was T. tridentata and the larger one was immature. It finished off its lip in captivity and turned out to be T. albolabris, the white-lipped forest snail. It is one of the larger and more attractive land snails, as well as one of the more common species. In June I found another immature T. albolabris in Vermont, added it to the terrarium, and it, too, finished its lip in a few weeks. I was worried when both large snails started with white growths on the right side of the head, but found that this contains the sex organs and the snails were interested in mating. However, I did not find any eggs. The earth was probably too wet. I found out later that snails like high humidity, but not swampy ground. Before we went on vacation in August, one T.albolabris

died -- cause unknown. When we came back from vacation, only the T. tridentata was there. The albolabris had finished off his leaves, chewed throught the plastic, and gone off in search of food. I could not find him anywhere in the recreation room or the nearby laundry room. There was no bad odor, so I did not worry. In the Fall I found two more specimens of albolabris in Vermont, and put them in with tridentata, who had shown no inclination to roam. One albolabris escaped and could not be found. I put heavy screening over the cookie tin. The other albolabris died in short order. I thought rust from the cookie tin might have been a contributing factor, so I transferred the little T. tridentata to an enamel pot. He survived just fine.

In the middle of March, 1971, I was down on my knees, vacuuming under the radiator in that room, when I found one of the two missing albolabris, wedged under the fins of the hot water baseboard radiator. It had an epiphragm over the aperture, so I put it in the pot with the other snail, hoping the animal might still be alive. The following day I looked and was delighted to find the albolabris out and crawling around. I am surprised that he was not cooked after six months under the radiator, but I'm happy to have hime alive.

SNAIL FEVER

William S. Murphy

Great progress in the control of snail fever, said to be man's second most common disease -- just behind malaria -- has been achieved by Communist China in the last twenty years, according to a recent article by Lawrence K. Altman in the New York Times. This achievement is chronicled in the current issue of The American Journal of Tropical Medicine and Hygiene by Dr. Tien-Hsi Cheng, a biologist at Pennsylvania State University. Dr. Cheng based his findings on about 250 reports published in Chinese Bio-Medical journals, on interviews with many Chinese expatriates, and on news reports from Communist and non-Communist sources.

Snail fever, or Schistosomiasis, is a treatable parasitic disease which effects about 150 million people outside of China, including some 50,000 residents of New York City. Most Americans with the disease acquired the parasite in rural areas of Puerto Rico, where the fresh water snail exists in rivers and canals and infects about 14 per cent of that island's 2.7 million people. The disease, which is not communicated from person-to-person, is acquired there by wading, working, laundering, or boating in contaminated water where the snail exists.

In 1949, Dr. Chang wrote, about 10.5 million Chinese and some 1.5 million of their cattle had Schistosomiasis, which can cause death by damaging the liver, spleen, bowel, and even the spinal cord.

Then the Chinese launched a national campaign against the disease and cured 3.5 million patients by adopting traditional and modern

practices from the Oriental and Western worlds. Fringe benefits included improved medical care in rural areas, better environmental sanitation, and superior public education about science.

Ed. Note: The life cycle of the snails involved is continued when human feces bearing the eggs of the parasitic trypanosome are deposited in fresh, slow running or still water. Hence one of the most efficacious methods of prevention of the disease is the construction of proper latrines and the education of the farm population to make use of these facilities. This is what was probably done in China.

STROMBUS TAURUS AND UNUSUAL SPONDYLUS AT KWAJALEIN

In his featured column, "Molluscana", appearing in TEXAS CONCHOLOGIST of April, 1971, Dr. W. W. Sutow includes these malacological notes from his recent trip to the Marshall Islands:

> Several of the collections we saw on Kwajalein displayed nice specimens of Strombus taurus. On inquiry, we found that these came from the Kwajalein Lagoon. Hitherto, this species was considered to be restricted to the Rongelap Atoll. (Rongelap Atoll is some 150 miles northwest of the Kwajalein Atoll). Apparently the taurus is found at depths of 60 feet to 160 feet and beyond. It is possible therefore that with SCUBA gear one might locate Strombus taurus in deep waters of other atolls
>
> I should also mention the specimen I saw of the Spondylus species. The thing was fully 14 inches in diameter and the valves were more than an inch thick. A few of these bevalves had been found attached to cables in 60 feet of water on Kwajalein. Deano Dean, the diver, who had found these specimens, apologized for showing me a small one only. He had actually collected some that were considerably larger! It would be interesting to speculate on this apparent giantism since most biological growth phenomena seem to have built-in limits.

RUDY LESSER

We are extremely sorry to report the death, on March 17th, of our member Rudy Lesser.

Mr. and Mrs. Lesser have been faithful members of the New York Shell Club since they joined us in May, 1958. Our deepest sympathy is extended to Mrs. Lesser and their family.

BOOK REVIEW. (We have not seen copies of the book in question but it seems wise to bring this trenchant review to the attention of our readers. ED)

Francesco Settepassi: Atlante Malacologico. I Molluschi Marini Viventi nel Mediterraneo. Vol. 1. Rome, 1967.

This is the first of the planned five volumes of the "Malacological Atlas -- the Living Marine Mollusca of the Mediterranean" -- a life long study by the venerable Curator of Molluscs in the Museo de Zoologia del Comune di Roma. The monumental work is in fact an extensive iconography of the polymorphism in the shells of the species considered. The subdivision of a species into a profusion of subspecies, varieties, forms, anomalies and monstrosities is in the s spirit is in the spirit of Monterosato, Coen and others. (We counted 98 different subdivisions of *Murex trunculus*, 92 each of *Murex brandaris* and *Semicassis saburon*, 73 of *Cassidaria echinophora*, etc. !). One wonders whether such subdivision can be justified and supported by genetic evidence.

The present volume is dedicated to the polymorphism of some gastropods, mainly in the order Stenoglossa (=Neogastropoda. ED.) The arrangement of the text is not systematic and coverage of species is incomplete; e.g. the Muricacea are only represented by the genus *Murex*. Each section is preceded by a short historical and ecological note and by a very exhaustive bibliography, from Aristotle to Pliny up to date -- probably the main merit of the Atlas. (There are 154 bibliographical entries on *Apporhais pespelicani* and 150 on *Murex trunculus*!)

The nomenclature of the author is breath-taking -- e.g. *Apporhais pes pelicani major digitis longis perfecta* Monterosato or *Murex (Bolinus) brandaris varicosus insculptus aculeatus dissonus* Sett. Ecological data and information on distribution of species from our parts of the Mediterranean are missing. Graphically the Atlas is very appealing: printed on chrome paper in album size with excellent illustrations. The photographs of the double-siphonal *bicaudata* monstrosity of *Murex brandaris* and the detached-whorls *scalare* monstrosity of *Murex trunculus* are particularly curious and amusing. So is the Atlas.

I. Yaron

(From ARGAMON, journal of the Israel Malacological Society, vol. 1. no. 2).

CORRECTION: In the March 1971 issue of the NOTES (#170, p.7) the strawberry shell from the Red Sea was incorrectly called *Clanculus pharaonis* Linnaeus. The correct name in use today is *Clanculus puniceus*. It has also been called *Clanculus pharonium*.

NYSC NOTES NUMBER 173 JUNE-JULY-AUGUST 1971

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THE AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: Sunday, SEPTEMBER 12, 1971, at 2:00 P. M. in EDUCATION HALL (1st floor, 77th Street wing; entered from Hall of the Northwest Coast Indians.)

PROGRAM: MOTION PICTURES OF LIVING MOLLUSKS:

INTERTIDAL MARINE ANIMALS OF THE PACIFIC NORTHWEST — THE MOLLUSKS. Shown through the courtesy of Dr. Arthur H. Clarke, National Museum of Canada.

NUDIBRANCHS AND THEIR ALLIES, by Gale Sphon, Los Angeles County Museum of Natural History.

DR. EDWARD T. LA ROE, School of Marine and Atmospheric Sciences, Miami, Florida, will be our guest speaker and will present his own filmed studies of

FEEDING IN JANTHINA JANTHINA

BEHAVIOR OF CAPTIVE LOLIGO PEALEI

FEEDING PATTERNS OF SIPHONARIA AND ACMAEA (A Time-lapse Study of their Movements and Feeding.)

PLEASE NOTE that this special program, in celebration of the New York Shell Club's milestone of 200 meetings, will be presented in the Museum's EDUCATION HALL instead of our usual meeting place, Room 319.

ANNUAL ELECTIONS

At our meeting of June 13th, Chairman Edward F. Cowles offered in nomination the following slate which was approved by unanimous vote of the members present: President, Mart Hulswit; Vice President, Dorothy Raeihle; Treasurer, Mathilde Weingartner; Corresponding Secretary, Dorothy Germer; Recording Secretary, Milton Werner, Jr., Historian, Nick Katsaras. Newly appointed were Directors William E. Old, Alice Barlow, and Albert Taxson. Harold Feinberg will continue as librarian; Karl Jacobson will head the editorial staff.

SEPTEMBER AUCTION

Nick Katsaras has scheduled an auction of shells for Sunday, September 19th, at the Broadway Dance Studio, 31-08 Broadway, Astoria, Queens, New York. Included in a small preview of the most outstanding shells he will present that afternoon were Marginella pringlei, Morum matthewsi, Cypraea teramachii, Tibia delicatula, Iredalina aurantia, a 2" Amaea mitchelli, and a 4¼" Conus recluzianus.

REVIEW:

CRITICAL ESTIMATE OF THE NUMBER OF RECENT MOLLUSKS

by Kenneth J. Boss. OCCASIONAL PAPERS ON MOLLUSKS, Cambridge, Mass., May, 1971, Vol. 3, No. 40, pp. 81-136, 13 tables.

It is generally conceded that the molluscan phylum is second in numbers only to the Articulata, of which the insects form a part. But exactly how many species of mollusks exist today? The figures generally given vary between about 130,000 and 40,000 -- a considerable gap in opinion.

Now Dr. Boss, of the Museum of Comparative Zoology of Harvard University, attempts to give a reasoned answer to the question, based on something more than mere guesswork. The thoroughness of his investigation is demonstrated by the almost 375 items in the bibliography accompanying the study.

The question might well be asked: Why can't one simply count the species published and thus arrive at an answer? The problem of course lies in synonyms -- added names given to single species either through accident, carelessness, wrong philosophy of speciation or -- be it confessed -- the desire of haphazard scholars and others to see their names in print. The result is that in most cases the same species have received many, often very many, names. A few examples from Dr. Boss's article: about 600 names have been given to fewer than 100 species of Cerion (peanut shells); 150 names were given to 10 species of Hawaiian helicinids; there are some pearl oysters (Pinctada) which have been named 40 times; the common blue mussel, Mytilus edulis, enjoys 25 names; 309 names have been given to 74 species of the east Asian tree snail genus Amphidromus, and the common garden snail, Cepea nemoralis, has no fewer than 250 synonyms. The worst case is that of the European swan mussel, Anodonta cygnaea, which has been needlessly renamed no fewer than 552 times!

In other words, there are plenty of names for relatively few species. To estimate this superfluity of names, Dr. Boss, among other techniques, uses the device of a synonym ratio (SR), that is the average number of names available for each species in a certain group. This SR is originally arrived at on the basis of monographic studies which have already appeared. The SR is then used to estimate those groups which have not been recently monographed. Thus Strombus has an SR of 6/1, or an average of six names for each valid species, pheasant shells (Phasianellidae) 10/1, Distorsio 7/1, periwinkles (Littorinidae) 12/1, and so on.

Dr. Boss's final estimate in round numbers, based upon the SR, monographs, and actual museum counts -- and adding possible as yet undiscovered species -- is that there are 46,810 living mollusks today including 20,000 prosobranchs, 7,500 bivalves, 16,000 pulmonates, 600 cephalopods, 600 chitons, and 350 scaphopods. There are also 250 Aplacophora, 10 Monoplacophora, and 1,500 opisthobranchs of which half are nudibranchs.

Besides providing, probably for the first time, a solidly based enumeration of living mollusks, Dr. Boss's study ought to have another

effect. It ought to give pause to modern workers who eagerly rush into print with poorly researched and worse investigated "new" species. This, sadly enough, still goes on merrily. Thus the "reservoirs" of useless synonyms are still being filled to overflowing, if they haven't reached that stage already.

The article which is the subject of this review is one of the forty important and informative articles that have so far appeared in the OCCASIONAL PAPERS published by the Mollusk Division of the Museum of Comparative Zoology, Cambridge, Massachusetts 02138, since 1945. This is a series of studies which are completely authoritative. They are clearly written and well printed. They constitute part of the more important malacological literature in print today. Dr. Boss's study is a good example of the excellence of these papers. They should be in the library of everyone interested in shells. And the price, $5.00 for 100 pages, is exceptionally reasonable in these inflationary times.

. . . M. K. JACOBSON

AN UNUSUAL OCCURENCE IN SPISULA SOLIDISSIMA

by Ronald Rozsa

On September 1, 1970, a valve of Spisula solidissima was discovered at Watch Hill, Fire Island, which proved to be extremely unusual. The valve was approximately three and one-quarter inches in length. In the center of the valve was an irregularly shaped hole about the size of a quarter with a layer of calcium carbonate that was wrinkled, thin, brown externally and white internally. If the original portion of the shell that had broken off had been present, there would have existed two layers of shell with a pocket between.

My first theory of this valve of S. solidissima was that a portion of the valve had been dislodged, leaving a large gaping hole which was then repaired by a thin, irregular layer of calcium carbonate secreted by the mantle. However, after examining the valve, Dr. Ruth Turner of the Museum of Comparative Zoology at Harvard University suggested another theory which, in view of the evidence, provides the most likely explanation. Dr. Turner showed me various specimens of bivalves where mud, sand, water and even fish had become lodged between the mantle and the valve. To arrest the irritation, the bivalve secreted a layer of calcium carbonate to encompass the material. Thus the substance became trapped in a pocket between two layers of calcium carbonate. Dr. Turner also said that the material involved probably was mud which generally had acid properties; hence the acid in the mud ate away at the calcium carbonate around it, making this part of the shell thin and fragile. When an object collided with that portion of the outer shell that was fragile, it broke off easily and the mud washed away leaving the thin layer of calcium carbonate that was originally produced to arrest the irritation. The remaining inner layer protected the bivalve from its many predators. In the original theory, the bivalve would not have been able to produce a layer of calcium carbonate quickly enough to protect itself from its predators.

The valve was sent to Dr. Kenneth Boss at the Museum of Comparative Zoology where it was assigned the catalogue number MCZ271962.

GEOLOGY AND SHELL COLLECTING IN THE NETHERLANDS ANTILLES AND PANAMA

Florentin J-M. R. Maurrasse

From December, 1970 to February, 1971 I served as sedimentologist on board the "Glomar Challenger" during its 15th expedition in a deep-sea drilling project. Like some other members of the scientific staff, I took advantage of opportunities to further a collecting hobby. I, of course, had shells on my mind.

The "Glomar Challenger", a research vessel sponsored by the National Science Foundation, was scheduled to drill into the bed of the Caribbean Sea for two months. We sailed from San Juan, Puerto Rico, and disbanded in Panama. Our objective was to drill to the crustal basement, using new devices allowing the reentry of the bit into the drill hole, so as to gather information on the history of the Caribbean Sea.

We started in the Venezuelan basin on December 6, and had put down nearly 4,000 meters (12,000 feet) of pipe when it was discovered that the thrusters, which hold the vessel in constant position even in rough seas, had broken down. The nearest port with an available dry dock was Curaçao. So, on December 9th we landed at Willemstad for an unexpected five day vacation. This "pre-cruise vacation", as we called it, was a good opportunity for geological activities on land, and for familiarizing ourselves with the surroundings. On the 10th we flew to Bonaire, which we covered in one day in a sort of geological safari. During the criss-crossing of the island, however, I was thinking about molluscs, although the increasing heaviness of the rocks in my bags didn't encourage the collecting of anything more. But I was there, and I wanted to observe what I could of the molluscan population. The first colony I found was of Cerion uva Linné, a land species very abundant in calcareous areas of the northern hilly parts of the island. It lives from the top of the hills to the littoral areas.

At Boca Olivia, the northeastern coast is rugged and exposed to strong wave action. The tide was low, but the crashing of the surf on the slippery rocks hindered thorough investigation of the lower intertidal zone. In the upper zone the molluscan fauna was rather poor in species, but rich in individuals, especially Nerita versicolor Gmelin and Nerita peloronta Linné, the latter particularly conspicuous for its size -- up to 4 cm in width. A few Littorina ziczac Gmelin and fewer Nodilittorina tuberculata Menke were in the rock crevices. Washed ashore beyond the upper tide line was an abundance of dead Fissurella barbadensis Gmelin, Acmaea pustulata Helbling, and Diodora cayennensis Lamarck, and a single Cymatium pileare Linné.

At the southeastern tip of the island, about 4 km north of Willemstoren lighthouse, is a rocky, rugged shore with exposed, weathered corals as sharp as knives. The molluscan fauna seemed much the same as at Boca Olivia, but here the Nerita peloronta weren't larger than 2 cm. There was one Echininus nodulosus Pfeiffer among the nerites, and no Littorina. I found no live shells in the flat, southern area or in the salt marshes. But the beauty of these vast marshes, with

thousands of flamingoes flushing the wilderness with their vivid pink, would make a bird-watching trip worthwhile.

In Curaçao, I visited only the area near our motel (the Holiday Inn), along Gov. Van Slobbeweg, but at greater length. Behind the Inn the shore is very similar to Bonaire. The rocky area extends up to the water plant, and the land is quite flat beyond. The molluscan population of the rocky area is comparable to Bonaire's, but more diversified, including Nerita tessellata Gmelin (common), Tectarius muricatus Valenciennes, Purpura patula Linné (fairly rare), and Acanthopleura granulata Gmelin (abundant in the lower intertidal zone only). Whereas T. muricatus was rare to moderately common in the rocky area, it was abundant in the flat intertidal zone west of the water plant, even above the high tide line. Among the dead shells on the littoral, large Cittarium pica Linné were quite frequent.

In contrast to the exposed ocean shore, the lagoons along "Pater Euwens Weg" were devoid of shells, except for the one about 50 yards east of the Inn. This is an isolated body of water densely populated with mangrove trees, mainly on the southern side. A few sewer pipes discharge a nearly constant flow of fresh water into it. Surprisingly, the molluscs found there live in the fresh water flow or nearby, and nowhere else. Neritina virginea Linné and Cerithium variabile C. B. Adams were so abundant they crawled on each other. A few Crepidula cf. convexa Say were attached to shells of both species.

After leaving Curaçao we worked at sea for two months; our next port was Panama City where we stayed two days in working sessions. I took two extra days for "touristing" and shell collecting on the Pacific side of Panama. My first collecting spot in Panama City at Avenida Balboa, near Calle 12 de Octubre, turned out to be a heaven for two species particularly: Nerita funiculata Menke and Thais kiosquiformis Duclos. They were everywhere in the intertidal zone, on the big basaltic boulders and blocks that make up the foundation of the Avenue. Collecting is possible here only at low tide. The sewer system of the city drains right into the bay, and the water is so filthy that no one would dare go into it. In addition to the barnacles that grow in profusion, there was just one Crepidula cf. marginalis Broderip on the rocks, and it was being eaten alive by a Thais kiosquiformis. I saw dead shells of several other species which I later found alive at San Felipe.

The following day I went west of the Canal Zone area to a locality called Vera Cruz by my hired driver, but it's probably the spot labelled Camaron on the Esso map. This region varies from wide, sandy beaches to rocky littoral and mangrove swamps. A lengthy search along the beach ended up with only dead specimens of Protothaca grata Say which was very abundant, as were other dead shells of minor interest to me. Disappointed with the beach, and sweating under the hot midday sun, I took refuge in the shaded mangrove area. Once my eyes got used to the relative darkness I went on again after living molluscs, but was not successful until I looked closely at the trees and realized that they were sheltering swarms of Littorina varia Sowerby, which live on the branches and the base of the trunks, immersed at high tide. A few Nerita scabricosta Lamarck were among the littorines, but only at the base of the trees, and closer to the

tidal pools, though not in the pools. In addition to the rather dull L. varia, I found a very few Littorina zebra Donovan in the tree crevices, clustered with L. varia and N. scabricosta, the latter showing the same beautiful, vivid orange and dark shades as L. zebra. The tidal pools were crowded with all kind of dead shells, all occupied by hermit crabs.

About 400 yards west of this point the rocky intertidal zone was populated mainly with large Nerita scabricosta in extreme abundance. The environment is different from the preceding areas, for the basaltic boulders (here in situ) are quite free of dirt and algae. Some colorful, nicely banded specimens of nerites were among the predominantly dark population. They totalled less than one percent and were evenly distributed among the others. Nerita funiculata and Thais kiosquiformis were also present, and I found it interesting that they were far fewer and not so well developed as those at Avenida Balboa. This environment was clearly the optimum for N. scabricosta, whereas the filthy, nitrogenous environment at the Avenue was optimum for the other two. There were quite a few Ostrea columbiensis Hanley living only in the mid-intertidal zone. As the tide was rising fast and I was on a rocky promontory well over 50 yards from the high tide line, I had to give up my observations and get to safety.

In the middle of the beach, adjacent to this rocky area, a huge basaltic block at least six feet high sheltered a very populous community of Littorina aspera Philippi. They were clustered in the zone which corresponds to the high tide limit, and even slightly higher.

On my way back to the city I visited a forest preserve in the Canal Zone with the hope of collecting some beautiful tropical land snails that I imagined might be living in this luxuriant vegetation. My optimism faded away after a long, unsuccessful search. I did find a few dead specimens of just one species, probably of the family Zonitidae, but they were in poor condition. Two factors might have been responsible for the scarcity of the land snails: first, the hygrometric conditions, since it was supposed to be the dry season; second, the nature of the soil, derived from the weathering of the basaltic substratum. Often this type of substratum, with little or no lime, does not bear as varied a molluscan fauna as is generally found in lime-rich areas.

Back from this collecting trip, I was visiting the old section of Panama City (San Felipe) in the late afternoon when I noticed a small cove near the government buildings and the "reforma agraria" building. The tide was at full ebb and water was still running down the tidal gullies in the steeply dipping, sandy beach. There were snails everywhere, busily burying themselves in the wet sand. Among them were Nassarius luteostoma Broderip & Sowerby, Nassarius complanatus Powys, and Anachis cf. costella Broderip & Sowerby. I had to act fast in order to collect some, because they disappeared quickly and for some reason are difficult to find, once dug into the sand. In contrast to the sandy upper intertidal zone, the lower intertidal and beyond has a rocky, although flat, bottom. There the community was entirely different -- not a single nassa, whereas Cerithium stercusmuscarum Valenciennes nearly blanketed the rocks. Many were dead shells inhabited by hermit crabs, as in most of the localities

previously visited. The species found at Avenida Balboa were also present, but again in negligible abundance as compared to the ceriths. The water here, though not as clean as in Vera Cruz, was not as polluted as at the Avenida Balboa. It is more exposed to wave action and to the open sea, the San Felipe area being a sort of peninsula.

In addition, I collected one Acanthina brevidentata Wood and a few Crepidula sp. The latter were clinging to the outside of the operculi of Cerithium stercusmuscarum -- perhaps the best way of assuring both food and safety? At least one specimen of oyster was found attached to a Thais kiosquiformis, as were colonies of barnacles. By the time I had gathered these specimens it was getting dark, and I had to leave. On the sandy beach I noticed a fragment of Cypraea (Zonaria) robertsii Hidalgo and other dead shells. The nassas had already dug into the sand.

My trip was over. The following morning I flew back to New York with an appreciable molluscan swag, and to face the job that all shell collectors share with more or less pleasure: cleaning the shells.

PUBLICATIONS:

WONDERS OF THE WORLD OF SHELLS: SEA, LAND AND FRESHWATER

by Morris K. Jacobson and William K. Emerson. The latest in the series of Dodd, Mead Wonders Books, 80 pages, 37 illustrations in black and white, photos and line drawings. Dodd, Mead & Co., New York, 1971. Buckram, $3.95.

In this compact volume the authors introduce the reader to the phylum Mollusca in simple, nontechnical language. Although the text was written particularly "for the young collector and beginning student", it is for the collector and/or student of all ages -- whether it be the beachcomber who picks up a shell to hold and wonder, or a shell club member of several years standing.

The explanation of how the mollusks are divided into classes, of where they live, how they eat, of the habits of homing mollusks and the collector shell, of useful mollusks and unpleasant mollusks, of byssus and of pearl, are so clearly written that at no point does the reader's attention lag for lack of comprehension. Important Latin terms are defined but otherwise common names are used -- for example, in the illustration of a live moon snail the attention is directed to the animal's form as typical of moon snails; the scientific name is deliberately omitted as it would have narrowed the focus to only one species. (Incidentally, the photo by George Raeihle is of a Natica canrena.)

We remind you that this is not a shell book with plates of illustrations to help you identify your shells, but is a book to give you a basic knowledge of the nature of what you've been collecting all these years. We commend the authors for their manner of presenting the material.

. . . D. RAEIHLE

NOTES and NEWS:

EXHIBIT OF SHELLS

On display during August, with probable extension through September, is a comprehensive exhibit of world wide marine shells (plus a few from land and freshwater) at the Johnson Library, Main Street, Hackensack, New Jersey. The exhibitor is our member Dorothy Germer, who arranged specimens from her collection in the several large cases. Needless to say, the exhibit is drawing much interest.

For those who plan to go see the exhibit -- note that the evening hours are 7:00 - 9:00 except on Saturdays, when closing is at 5:00 PM.

CONGRATULATIONS

At the recent meeting of the Western Society of Malacologists, NYSC Charter Member Anthony D'Attilio received an award for having made outstanding contributions to malacology. Mr. D'Attilio's work in this field is of many years duration and the award well merited. He contributed much to the New York Shell Club and our NOTES (see index); he became an Associate in the Department of Mollusks of the American Museum of Natural History. In 1968 the D'Attilios moved to San Diego where Tony is now working with Dr. George Radwin in the San Diego Natural History Museum.

FIELD TRIP

Members and guests enjoyed perfect weather and good shelling at Orient Beach State Park June 19th. Finds included a colony of Acmaea testudinalis fergusoni Wheat. (Details of trip in our next issue.)

AMU

The meeting in Cocoa Beach July 15-20 was still another "best ever", with Dr. David H. Stansbery as president and members of the Astronaut Trail Shell Club our considerate and efficient hosts. (More details in our next issue.) Next meeting will convene in Galveston July 10, 1972, with Dr. Arthur S. Merrill as president.

SHELL MOSAICS AT OLD WESTBURY, L. I.

At our last meeting Willie Antonowitz brought us an invitation from the Directors of Old Westbury Gardens to attend a cocktail party in honor of Artemis Jegart Housewright for a viewing of her shell mosaics. Mrs. Housewright is a noted painter and sculptress with many awards. Twenty of our members were present June 26th to delight in the mosaics and to enjoy the affair.

Three panels of shell mosaics, depicting scenes in nature, are in a grotto overlooking the pool. Each panel is approximately 8' x 6'; the shells making up the designs are all in their natural shapes and colors. Mrs. Housewright's vigorous, contemporary treatment of shell art, using oysters, mussels, scallops, tellins, augurs, and other species, makes these mosaics unusually attractive.

(Old Westbury Gardens, Long Island, is open to the public Wednesday through Sunday, May to late October. There is a moderate charge for admission.)

PUBLICATIONS RECEIVED

AUSTRALIAN NEWSLETTER, new series No. 12, January 1971. 12 pages. Includes an article, STATISTICAL SUPPLEMENT FOR CYPRAEIDAE OF NEW SOUTH WALES, by A. H. Newman, who writes: "All of these shells have been collected dead. I do not collect live shells ...wherever I can, I discourage the taking of live shells." (In these days of growing concern for the ecology, this is a thought we should carefully consider. -- mkj)

CHICAGO SHELL CLUB NEWSLETTER, June 1971. 4 pages.

CONCHOLOGIST'S NEWSLETTER, The, No. 37, June 1971. pp. 204-214. Produced by THE CONCHOLOGICAL SOC. OF GREAT BRITAIN & IRELAND

GALVESTON SHELL CLUB NEWSLETTER, No. 59, June 1971. 4 pages.

MIAMI MALACOLOGICAL SOCIETY QUARTERLY, Vol. 4, No. 4, Spring 1971. pp. 36-45.

MOLLUSK CHASER, South Florida Shell Club, Vol. 9, No. 6, (new series), June 1971. 4 unnumbered pages.

NEWSLETTER OF THE BOSTON MALACOLOGICAL CLUB, Vol. 2, No. 8, May 1971. 1 page.

OF SEA AND SHORE, Thomas C. Rice, Port Gamble, Washington

SEAFARI, Palm Beach County Shell Club, Vol. 13, No. 3, April-May 1971. 16 pages.

SHELL-O-GRAM, THE, Jacksonville Shell Club, May 1971, 6 pages. In this issue Frank Lyman, well known shell dealer, offers to show a specimen of the very rare _Voluta_ (_Alcithoe_) _ponsonbyi_ Smith, _ex pisces_ but in perfect condition.

STERKIANA, No. 42, June 1971. 59 pages. Includes continued reprint of B. Walker's CATALOGUE OF THE MORE RECENTLY DESCRIBED SPECIES, Ann Arbor, Michigan 1918.

TEXAS CONCHOLOGIST, The Houston Conchological Society, Vol. 7, No. 8, April 1971. pp. 81-92. This number continues the extremely interesting and valuable series of articles entitled NOTES CONCERNING TEXAS BEACH SHELLS by Helmer Ode and Anne B. Speers.

TEXAS SHELL NEWS, San Antonio Shell Club, Vol. XIV, No. 1, Jan-March 1971. 17 pages.

TIDE LINES, St. Petersburg Shell Club, 24th Annual Shell Show Booklet, February 1971. 17 pages.

UNDERWATER NATURALIST, American Littoral Society, Vol. 7, No. 1, Spring 1971. 44 pages. Includes articles, LIFE AND POLLUTION IN GREAT SOUTH BAY, by George Claus, PLANKTON-WATCHING IN THE CHESAPEAKE BAY, by Sue Andrews.

VELIGER, THE, Vol. 14, No. 1, July 1971. 136 pages. Numerous figures, especially 9 incredible plates showing the scanning microscope pictures of the larval shells of several species, enlarged 150 to 5,000 times, revealing indescribably complicated and beautiful microsculpture in some of the protoconchs (Robert Robertson, pp. 1-12, pls. 1-9).

WELLINGTON (N. Z.) SHELL CLUB BULLETIN, No. 25, May 1971. 4 pages. Study Group Supplement on the Family Epitoniidae, 7 pages.

JUNE, 1971, SUPPLEMENT TO ROSTER OF NEW YORK SHELL CLUB

We welcome our new members, and bring you to date on changes in address since our supplement of January, 1971.

NEW MEMBERS

BARNETT, Mr. George H., Jean E.	Koran Avenue, MD.#23, Newburgh, New York 12550
BEATLEY, Mr. Brad	Box 1, Russels Point, Ohio 43348
BERNHART, Mr. Horst	Now en route from New York to Australia
BRADY, Mr. E. Leo	P. O. Box 2515, Newburgh, New York 12550
DANIELS, Mrs. Florence	300 East 71st St., New York, N. Y. 10021
DEGAN, Miss Sandra	12 West 72nd St., New York, N. Y. 10024
DELGADO, Mr. & Mrs. Vernon	17 Kenneth Ave., Huntington, N. Y. 11743
DeSOUZA, Miss Joan	34 Ellerslie Pk., St. Clare, Trinidad, B.W.I.
FETCHU, Miss Kathy	1711 Gypsy Road, Niles, Ohio 44446
FRAZER, Mr. Hugh	132 East 35th St., Apt. 18K, New York, N. Y. 10016
HALLENBECK, Mr. & Mrs. David	6 South Lake Ave., Albany, N. Y. 12203
HOUSTON MUSEUM OF NATURAL SCIENCE, Library - Information Center	P. O. Box 8175, Houston, Texas 77004
KEEL, Mrs. Suzannah	416 East 85th St., New York, N. Y. 10028
LESSIOVSKI, Mr. Victor M.	United Nations, Room 3850, New York, N. Y. 10017
ORZACH, Dr. & Mrs. Jack C.	56 Rose Ave., Great Neck, N. Y. 11021
ROZSA, Mr. Ronald	423 Taylor Avenue, East Patchogue, N. Y. 11772
SHARP, Mr. & Mrs. John*	65-61 Saunders St., Rego Park, N. Y. 11374
SILVERSTEIN, Mr. Peter	4863 Broadway, New York, N. Y. 10034
SNYDER, Mr. William*	7 Hemlock Road, Bronxville, N. Y. 10708
STEARN, Mrs. Frances	277 Van Cortland Ave, Bronx, N. Y. 10467
SZABO, Miss Janet	40 West 83rd St., New York, N. Y. 10024
TATES, Mr. Philip**	419 West 19th St., New York, N. Y. 10011

CHANGES IN ADDRESS

COMPITELLO, Mrs. Juliette	5630 Alta Vista Rd., Bethesda, Maryland 20034
MAYERHOFER, Miss Meta	1040 West Hollywood, Apt. 406, Chicago, Illinois 60626
RUSSELL, Mrs. Mary T.	Long Reef Apts. #73, Christiansted, St. Croix, V. I. 00820
SCOTT, Billie J.	1074 Prickett Lane, Billings, Montana 59102
TIDEWATER SHELL AND FOSSIL CLUB	P.O. Box 62421, Virginia Beach, Virginia 23462

CHANGE OF NAME

Miss Fran Hutchings is now Fran Hutchings Thorpe, 3910 Battersea Road, Coconut Grove, Florida 33133

*Inadvertently omitted from last supplements.
**Reinstated; new address.

NYSC NOTES NUMBER 174 SEPTEMBER 1971

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These NOTES are distributed by mail to all members of the NEW YORK SHELL CLUB, Inc. Dues: Full membership $4.00 per year, $1.50 additional for each of other members of the same family -- with one copy of NOTES per family. Corresponding membership $2.50 per year. A limited number of back issues of the NOTES are available at $.30 postpaid per single copy; also bulk rates. Items and articles for publication in the NOTES should be sent to the Editor. The Corresponding Secretary should be notified **promptly** of any change in your address.

The NEW YORK SHELL CLUB meets on the second Sunday of each month, September through June, in

THE AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: Sunday, OCTOBER 10, 1971, at 2:00 P.M. in ROOM 319.

PROGRAM: ANATOMY FOR THE SHELL COLLECTOR -- CONTINUED. Morris K. Jacobson.

THE GALAPAGOS EXPEDITION -- PART II
William Old.

EUROPEAN MALACOLOGY INSTITUTIONS -- Mart Hulswit.

THE NEW YORK SHELL CLUB cordially thanks the Santa Barbara Museum of Natural History, Nelson W. Baker, Curator, and Gale Sphon, of the Los Angeles County Museum of Natural History for allowing and facilitating our rental of their film, "Nudibranchs and Their Allies".

We also thank Dr. Edward T. LaRoe, formerly with the Marine Biological Laboratory of the University of Miami, presently Executive Director of the Collier County Conservancy, for sharing with us his fascinating films on _Janthina janthina_ feeding, a time lapse study of _Siphonaria_ in motion, and several species of Cephalopoda in captivity.

Both parts of the program contributed greatly to the celebration of the New York Shell Club's 200th meeting in June, 1971.

MEMBERS' NOTES ON THE JUNE 19TH FIELD TRIP

The day of the Club's annual field trip was beautiful. Low tide at Orient Beach State Park, L. I. occurred at 1:30 p.m. The group numbered about 40 members and guests, productive and pleasant all around. Sensing a lucky streak, and hoping for a ready-made article, the editors asked for written comments on the day. It worked, as shown by the following excerpts.

Sandy Hunter: The following species were new to me at Orient Point: _Urosalpinx cinerea_ Say, _Busycon canaliculatum_ Linne (beach); _Crassostrea virginica_ Gmelin, _Crepidula plana_ Say, and _C. convexa_ Say. June seems to be the month for egg-laying by _Crepidula convexa_.

Marian Lochbaum: I found some species I didn't have, and even ventured knee-deep in the (cold) water! Wow! I enjoyed myself...

Frank Nelson: Our most interesting finds were nine _Acmaea testudinalis_...(plus) live _Aequipecten irradians_ and _Anomia simplex_, fresh-dead _Laevicardium mortoni_, and _Melampus bidentatus_... We discovered that _Bittium alternatum_ is almost invariably found on a specific seaweed, and the limpets were most frequently discovered on rocks having hold-fasts of a single type of seaweed. We enjoyed ourselves so much

we went back three weeks later. We found several species not found on the field trip, and didn't find others that were common just three weeks earlier.

Dorothy Raeihle: Shortly after our arrival we cut across the picnic ground to Long Beach Bay, to find this nearest station unchanged: the colony of barnacle-covered *Modiolus demissus* dug in at the reeds above the low tide line, many *Littorina littorea*, juveniles to adult, innumerable small *Littorina saxatilis*, *Crepidula fornicata* clinging to pebbles, and *Ilyanassa obsoleta* in the muddy sand. Alternately wading in the shallows and walking the beach westward toward the mouth of the bay, we found occasional specimens of *Eupleura caudata*, *Urosalpinx cinerea*, and egg cases of both. Near the neck of the bay the number of species increased; there were *Aequipecten irradians*, *Busycon carica*, *Laevicardium mortoni*, and a variety of beach specimens. *Bittium alternatum*, *Lacuna vincta* and tiny *Littorina* were on the fine-bladed seaweed, *Enteromorpha*, but though several clumps of the seaweed were rinsed in a pail of sea water we found no nudibranchs -- from either Long Beach Bay or Gardiners Bay.

At about tide change a group of shellers located a colony of *Acmaea testudinalis fergusoni* Wheat (subspecies of *A. testudinalis* Müller) at the same station in Gardiners Bay where we had found them on the 1960 field trip. Do they come and go, or have they been there all the time?

Ron Rosza: One fascinating item about the field trip was the development of a "search image" that could distinguish the difference between *Acmaea testudinalis* and *Crepidula fornicata*. It seems impossible that one could distinguish an algal-covered limpet from an algal-covered slipper shell by the height of the shell, location of the apex, and occasionally the type of rock. Locating each limpet became progressively easier... One beneficial aspect of the trip was getting to know fellow-collectors. One not only learned new collecting ideas, but learned new trivia about certain species.

Peter Silverstein: Two of the whelks I collected I tried to keep alive, but they died after a few days. (At first) they were in a small drum bowl with natural seawater. I bought artificial seawater and a regular tank, but I think the water was not allowed to cure properly, as the whelks died soon after they were put in the tank... I noticed a few periwinkles stacked up like *Crepidula*.

Jordan Star: ...I learned how to look for mollusks in their natural habitat. The most interesting find, with the help of other members, was a very little shell of the genus *Bittium*, which was found in seaweed. *Littorina* was found, and also a lightning whelk. The conversation with the other members was very interesting and informative.

Marie Sussman: It was a "first time", all around, for me... shell trip,...Orient Point...association with an active club. I enjoyed the collecting, the sun and sea, the socializing, and the dinner. I learned that I have a great deal to learn...also, that boiling out my *Busycon canaliculatum*, four *Urosalpinx cinerea*, some *Crepidula fornicata* and many *Littorinas* can be a malodorous chore, but worth the effort. Common as these shells are, they transcend the ordinary because

they are associated with a very pleasant day...My husband thanks the club for giving him a reason to get away from his office and compare notes with other shutterbugs.

..assembled by Mike Werner

SOME HIGHLIGHTS OF THE AMU MEETING IN COCOA BEACH, FLORIDA

Evening of July 14th: The patio party and supper at the home of Mrs. Smith Whiteside where we became acquainted with members of the Astronaut Shell Club (who fed us very well, indeed) and where old friends quickly erased the year since they'd last met.

The formal sessions, July 15-20, where President David Stansbery presided with efficiency and graciousness: Studies of stations before and after "improvement" gave us a good background for Monday's open forum on endangered species, as did studies of living mollusks -- their reproduction, growth, behaviour, needs, and ecological niches. There were some remarkable films: Dr. Ruth Turner used time-lapse photography to show larval shipworms settling and boring, using their shells to ream the wood; Dr. Dorothy Beetle also used time-lapse photography on a fresh-water snail, Goniobasis, thus considerably speeding up its natural "snail's pace." John Culliney showed a number of tiny bivalves that varied in their manner of locomotion; Dr. Edward LaRoe removed supposition with his film of Janthina janthina attacking and ingesting Velella; Dr. Arthur Clarke presented "Intertidal Marine Animals of the Pacific Northwest -- The Mollusks", a beautiful color film from the National Museums of Canada.

At the workshop for rare and endangered species, among other important and interesting suggestions, a proposal was made to remind us of our duty as shell collectors toward nature and our own consciences. AMU members were urged to reconsider their collecting activities of live specimens and to collect with discrimination. It was suggested that they bear in mind the danger to the ecology involved in the indiscriminate gathering and killing of more specimens than can possibly be used. There was also the nagging ethical problem to be considered: Do I have the right to deprive a smaller and weaker creature of its life to satisfy a passing whim?

One of the nicest events was the clambake on North Grange Island, in the Indian River near the town of Grant. Another was the banquet, with more delicious food. Added attractions were the beach in back of the motel, where Terebra and two species of Donax were collected, and a scallop fishery's spoil pile a few miles north at Port Canaveral. Those collecting from the spoil pile can most appreciate the work of the Astronaut Trail Shell Club's members who had collected and cleaned hundreds of specimens to use as decorations at the banquet and to present to the delegates as souvenirs.

The field trips July 21 Lake Washington and Sebastian Inlet were both productive; guests were able to collect several species that were new to them. To many it was an introduction to a new type area with shelling that differed from other areas in Florida.

It had been an instructive and enjoyable week. Our thanks go to Dr. and Mrs. Stansbery and to our most considerate hosts, the members of the Astronaut Trail Shell Club.

MKJ, DR.

CLANCULUS CORRIGENDA

by William E. Old, Jr.

Two notes on this subject by Karl Jacobson in Shell Notes, 170 and 172, led me to attempt to correct the status of two taxa of "Strawberry shells" of the genus Clanculus. One species is found in the Red Sea, and the other occurs off East Africa. Perhaps adding to the confusion is the figure of the East African species in Abbott's Sea Shells of the World, p. 28, labeled as "Clanculus pharonium (sic) L." There seem to be two species involved in the mixup, or at least two distinct races. Shells of both species attain the same size: 3/4 of and inch in diameter.

Clanculus pharaonius was described by Linnaeus in 1758. The shell is covered with spiral rows of raised beads. Examining specimens in the collection of the American Museum of Natural History, I found they had 18 rows of beads on the body whorl, or nine rows from the suture to the periphery. In coloration, the shell is mostly coral red with alternating rows of black dots. Or to quote Tryon and Pilsbry, beginning at the suture, and counting downward, "the 1st, 3rd, 5th, 7th, 9th and two on the base are composed of alternate black and white granules." This species occurs in the Red Sea, and is not a particularly common one in collections.

The second, and better-known species, is the "Strawberry shell." It occurs along the East African coast from Somalia south to Mozambique, and is particularly common around Zanzibar. It is also found off Madagascar. Clanculus puniceus Philippi, oddly enough, was not described until 1846. Prior to that time, it was usually considered a variety of C. pharaonius. An examination of specimens yielded the following rib count: 22 rows of beads on the body whorl, or 8 rows above the periphery and 14 rows of beads of diminishing size below it. In coloration C. puniceus is red with black dots in only two of the rows of beads (the 4th and 8th rows to be precise).

Therefore, the consistently different rib count, distinct coloration, and separate ranges of the shells lead me to believe that they are two distinct, if closely related, species.

Some fifty species of shells of the genus Clanculus are widely distributed in the Indo-Pacific and Mediterranean Provinces. They reach their zenith of speciation in south and southern Australian waters, where workers have divided them into 7 subgenera. The largest species of the genus is C. undatus Lamarck, reaching a diameter of 1 1/2 inches. All of the species are handsome little shells. They are not particularly rare, but are seldom well represented in private collections.

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Jacobson, M. K. New York Shell Notes, No. 170, Mar. 1971, p.7;
No. 172, May 1971, p. 6.

Linnaeus C. *Systemae Naturae*, Stockholm, Sweden, 1758

Philippi, K. T. Diagnoses Testaceorum quorundam novorum. *Zeitschrift fur Malakozoologie*, pp. 97-106, Cassel, Germany, 1846

Tryon, G. W. and H. A. Pilsbry. *Manual of Conchology*, vol. 11, Philadelphia, 1889.

SHORT NOTICES

We regret that we omitted the fact that the article by Grace McDougall NOTES No. 171, pp.5-6, on pollution in southern Florida was based upon a study written by Mr. William Barado of Orlando, Florida. Our sincere apologies to Mr. Barado.

Of course we meant ARTHROPODA and not ARTICULATA in the review of Dr. Boss's article on the numbers of recent mollusks (NOTES No. 173, p.2, line 6). It is a slip like the hundering therds and fothers and mathers. These things just happen. We are grateful to Club Member Harold Feinberg who gently brought this lapsus to our attention.

M.K.J.

EXTRACTS FROM THE MINUTES OF THE MEETING OF JUNE 13, 1971.

The first presentation was the second of Karl Jacobson's talks on molluscan systematics. The emphasis was on the division of prosobranch gastropods into the archeo-, meso- and neogastropods. He illustrated with slides the distinctions by which archeo- and neogastropods can be recognized, and discussed the differences in anatomy and life styles. He also pointed out the relationships between certain physical characteristics and life style.

The Shell-of-the-Month was a black-mouthed variety of *Strombus alatus*, presented by DuPuy Greer. He recently collected several in Lake Worth, between Jupiter and Riviera Beach, Florida, for the first time after many years of collecting there. He displayed a magnificent specimen, accompanied by other fine ones.

Bill Old, the second speaker, recounted the earlier stages of a scientific collecting trip to the Galapagos last February, in which he participated. The expedition, called "Ameripagos '71" was enlivened by such events as the discovery that whoever had remembered to ship a generator had forgotten to include the light bulbs. And that the large cargo of expedition equipment, both utilitarian and scientific, had been removed from the plane in Mexico City. Also, there was an unexpected two-week delay for plane space from Peru to the islands. This time, spent in Peru, resulted in some scenic photos which Bill showed, and in some chiton collecting, covered by photos showing locations, and close ups of specimens. Bill will speak on his activities in the Galapagos at a later meeting.

AN INTERESTING FIND IN ROCKAWAY BEACH, NEW YORK.

Morris K. Jacobson

A small piddock or boring clam called Diplothyra smithii Tryon was described from near Tottenville, Staten Island, New York by G. W. Tryon in 1862. It was found boring in oyster shells. On numerous visits to Ward's Point near Tottenville, we frequently found dead oyster shells bearing the cavity excavated by Diplothyra, but never the boring clam itself.

Recently, Mr. Bernard Blum of Rockaway Beach brought a single valve of a surf clam (Spisula solidissima Dillwyn) to the American Museum and showed it to Mr. Harold Feinberg. It contained a single specimen, both valves, of Diplothyra smithii resting at the bottom of its characteristic cavity. The shell had been collected in Neponsit, Rockaway, after the recent storms. The Diplothyra was recently dead since the soft parts, greatly desiccated, were still visible in the half opened valves.

The shell of Diplothyra is rather small, 10 mm long, 7 mm high (about 3/4 x 1/2 inch). It is described but not figured by Abbott as Martesia smithii in AMERICAN SEA SHELLS, p. 465 (not in index). A very complete account with some superb illustrations can be found in R. Turner's monograph in JOHNSONIA, 1955, vol. 3, No. 34, pp. 118 ff. Although Diplothyra smithii ranges from Provincetown, Massachusetts to Daytona and Sanibel Island, Florida, and west to Texas, the type-locality is right here in Tottenville, Staten Island.

The interesting thing about Mr. Blum's find is that it is a third record for the New York City area. The other two records are that of G. W. Tryon in 1862 and another find in "an oyster shell dredged somewhere around Staten Island" by Hubbard and Smith. Moreover, this is the first record of the species boring into a Spisula shell. Its usual habitat is oysters and Turner also reports one found in the shell of Fasciolaria gigantea Kiener. It is also of interest to note that it was found in a dead shell thus confirming Abbott's statement that it is fairly common in "old" oyster shells and Turner's remark that it also occurs in coquina rock. Even if it bores into live oysters, as Dr. Turner writes, it does "not appear to injure them sufficiently to be of economic importance to the fisheries." On plate 2 of JOHNSONIA No. 33 (1954) we see the picture of an oyster shell bored by at least 11 specimens of Diplothyra.

Many shells on the beaches in the Rockaways show signs of having been bored by some organism. The hole left by Diplothyra is easy to detect because when viewed in long section it has a shape very much like a tiny bartlett pear. The holes left by other borers or drills are 1) the circular hole with countersunk edges left by Polinices (see NOTES, 140:6, 142:5); 2) the tiny straight hole left by the oyster drills (Urosalpinx and Eupleura); 3) the endless galleries, like miniature mining tunnels, left by the boring sponge (Chione); and 4) the shallow U-shaped trench which doubles back on itself, left by a polychaete worm.

PUBLICATIONS RECEIVED.

ARAGMON, organ of the Israel Malacological Society, Vol. 2, Nos. 1-2, July 1971. 56 pages. Includes abstracts of the papers given at the first symposium of the IMC, Tel-Aviv, 11 April 1971. The second symposium is slated for April 1972.

This issue also contains an extremely valuable study, with excellent illustrations, of the Cypraeidae from the Sinai area of the Red Sea by Dr. H. K. Mienis of the Hebrew University, Jerusalem. The author writes: "we accept the subdivision of the cowries into several genera, but we reject the further division into subgenera." Dr. Kay has proposed, on solid grounds, that the single genus Cypraea be recognized and that all other supraspecific names be considered subgenera. Dr. Mienis's ideas thus do not go much beyond the confusing concept of Joyce Allen (1956) and, in our opinion, is a step backward from the system adopted by Burgess (1970). 32 species are described and discussed in this preliminary report.

WESTERN ATLANTIC DONAX by J. P. E. Morrison, Feb. 1971. Biol. Soc. of Washington, Vol. 83, pp.545-568, 2 plates.

The author recognizes 11 species of which 2, one from Florida the other from Brazil, are new. The suggestion is made that the name Donax variabilis Say, the beautiful Florida coquina clam, be changed to D. roemeri protracta, Conrad.

OF SEA AND SHORE. Published and edited by Tom Rice, P. O. Box 33, Port Gamble, Washington 98364. Vol. 2, No. 2, Summer 1971, pp. 54-103, lavishly illustrated. This is an informally written but well printed and extremely interesting periodical for the collector. Aquarists will appreciate the article by Vernon L. Human, of Venice, Cal., "Southern California Gastropods in the Marine Aquarium" (pp. 73-88). Mr. Human considers the aquarium suitability of over 150 species and includes many careful notes on feeding and behavior.

MARY SUBIS

Word has just reached us of the passing of Mary Subis in Manahawken, New Jersey on July 12. She joined the New York Shell Club in 1960 and assembled an interesting and extensive collection of world-wide sea shells. She will be missed.

RUTH RICHMOND

We were sorry to learn of the recent death of Mrs. Ruth Richmond, of Beverly Hills, California. Mrs. Richmond was a shell collector for many years and had built a fine collection. She joined the New York Shell Club in March, 1962, and thus became acquainted with several of us who shared her interests. Her many friends will miss her.

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NYSC NOTES NUMBER 175 OCTOBER 1971

NEW YORK SHELL CLUB INC.

FOUNDED JAN. 1949

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These NOTES are distributed by mail to all members of the NEW YORK SHELL CLUB, Inc. Dues: Full membership $4.00 per year, $1.50 additional for each of other members of the same family -- with one copy of NOTES per family. Corresponding membership $2.50 per year. A limited number of back issues of the NOTES are available at $.30 postpaid per single copy; also bulk rates. Items and articles for publication in the NOTES should be sent to the Editor. The Corresponding Secretary should be notified promptly of any change in your address.

The NEW YORK SHELL CLUB meets on the second Sunday of each month, September through June, in

THE AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: Sunday, NOVEMBER 14, 1971, at 2:00 P.M. in ROOM 319

PROGRAM: MALACOLOGY FOR THE SHELL COLLECTOR -- CONTINUED. Morris K. Jacobson.

COLLECTING IN WEST AFRICA -- Veronica Parker Johns.

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EXCHANGE AND COLLECTION OFFERS

World-wide marine shells for world-wide marine shells. Jordan Star, 186 Parkway Drive, Roslyn Hts., New York 11577

Cypraea, Murex, Voluta, Conus for exchange of similar genera. Sol Weiss, 65 Harvard Street, Roslyn Hts., New York 11577

Collection for sale, representing many years of work. Includes world-wide Conus, Cypraea, Voluta, Murex, Metra, Oliva, etc. For information write Nick Katsaras, 478-B South Washington Avenue, Bergenfield, N.Y.07621

We will print similar offers of exchange gratis for members as space permits.

Most marine animals cause a sufficient chemical change in the water surrounding them to be detected by their neighbors. Nudibranchs (snails without shells) discharge into the water certain substances that cause nearly all other marine animals to avoid them, affording the nudibranchs an efficient, protective mechanism from their enemies.

SEA SECRETS, Vol. 8, No. 9, Oct. 1964

THE KATSARAS AUCTION

For his 15th annual auction on Sept. 19th, Nick Katsaras again brought together specimen shells from all over the world. The 65 to 70 collectors present saw to it that by the end of the afternoon the shells were again scattered -- into collections from New York to Florida to Missouri and points between. There were also postage stamps bearing illustrations of shells, a shell headband from a South Sea island, a silver "conch dollar" from the Bahamas, and some assorted literary items.

The cone collectors had a fine time, with *Conus* from *abbotti* through *lynceus* and *stupella* to *zeylanicus*. There was particular interest in the Marginellas, which were from West Africa, Brazil, Thailand, the Galapagos, and elsewhere. *Strombus listeri* and *Cypraea teramachii* were most desirable, as were *Thatcheria mirabilis*, *Gaza superba*, *Scaphella junonia* and many other species.

Along with the data came some interesting bits of information, such as: *Conus teramachii* has a serrated operculum; *Cypraea fuscorubra* has never been found alive; *Trochus dentatus* is found only in the Red Sea; *Latiaxis babelis*, endemic to the Mediterranean, is the type species of *Latiaxis*, *Rapana* was introduced into the Black Sea.

To our knowledge, Nick Katsaras is the only person in this country who has, in recent years, held shell auctions on a regular basis. He tells us that changing conditions are discouraging the continuance of these affairs.

WHAT IS THE MAXIMUM SIZE REACHED BY THE SURF CLAM (*Spisula solidissima* Dillwyn)?

The following data are drawn from various authors:

Binney-Gould, 1870, Invert. of Mass.	4-1/1 x 2-3/4 in.
Apgar, 1891, Moll. of Atlantic Coast	110 x 45 mm (about 4-1/2 x 2-3/4 in.)
M. Smith, 1937. East Coast Mar. Shells	100 to 175 mm (about 3-7/8 x 6-1/2 in.)
P. Morris, 1947. Field Guide to Shells	more than 6 in. long
J. Roger 1908. The Shell Book	7 in.
R. T. Abbott, 1954. American Sea Shells	up to 7 in.
R. J. Heuer, 1970. Exploring for Sea Shells, Martha's Vineyard	up to 7 in.

The largest surf clam I ever found measures 8 in. in length and 5-7/8 in. height. It consists of only a single valve and was collected on the beach in Rockaway, New York. It is the specimen mentioned in Jacobson & Emerson, SHELLS OF THE NEW YORK CITY AREA, p. 97. It is now in the collection of the American Museum of Natural History.

MKJ

MINUTES OF MEETING, SEPT. 12, 1971

The Club's 201st meeting, and the first of the new season, was held in the Education Hall of the Museum on September 12th.

On of President Mart Hulswit's announcements concerned the file of NYSC NOTES sent by Dorothy Raeihle to the Library of Congress many months ago. It arrived only recently, in a badly damaged package, and minus a number of issues. Dot has now replaced these, making Xerox copies where necessary, and we expect soon to be assigned a L C number.

Narration for the first two films was provided by the photographer, Dr. Edward T. LaRoe. They were made when he was affiliated with the Rosenstiel School of Marine and Atmospheric Sciences, at the Marine Biological Laboratory of the University of Miami. He is now Executive Director of the Collier County Conservancy, Naples, Fla. In the opening sequence of the first film, photographed in a tank, a Janthina janthina was seen feeding on a Porpita, a small green and yellow jellyfish of the Velella complex. The snail's method was to lunge, grip the central disc with its radula, and quickly ingest the entire organism. In the second sequence, a nudibranch, Glaucus glaucus, grazed delicately on the radiating filaments of a Porpita. The third was a speeded-up record of eight hours in the lives of a colony of Siphonaria siphonaria, showing their feeding travels and their precise homing behavior. The final footage showed a Cyphoma gibbosum moving about on a sea fan.

In Dr. LaRoe's second film, two small octopods in a tank demonstrated their reactions to photographic lights. One showed its agitation by changing color, and by ignoring a food tidbit - a small crab. The second grabbed the crab off-camera, but did some on-camera chewing. Other sequences showed embryonic squid just before hatching, in their transparent egg cases, and the movements of newly hatched young.

The third film is a pioneering study of movements and behavior of a number of nudibranchs of California. It was made by Dr. Gale Sphon, of the L. A. Museum of Natural History, and Nelson W. Baker, of the Santa Barbara Museum of Natural History. Mart, who acted as commentator, pointed out that there is no known way of preserving a nudibranch, which makes photographic records, especially motion pictures, singularly valuable in the study of these mollusks. Many of the species seen are fantastic and beautiful in their structure and coloring. Their gliding movements are graceful, and their fluid swimming motions are spectacularly so.

Milton Werner

HOWARD ROOT

Hours after returning from the AMU meeting at Cocoa Beach, Mr. Howard Root of West Palm Beach collapsed and died of a heart attack at a business place near his home. Though taking no active part, Mr. Root was a familiar figure at the annual AMU meetings since he had accompanied his son John to most of them over the past decade. He was 78.

NOTES ON *ACMAEA TESTUDINALIS* MUELLER

Dorothy Raeihle

One of the less common species found on Long Island is *Acmaea testudinalis fergusoni* Wheat, our local tortoise-shell limpet. On the New York Shell Club's field trip last summer, a few of us located a colony of these *Acmaea* and were making general observations when questions came up about their biology. The questions which remained unanswered were enough to motivate a search in the books of our home library. Thus were gathered the following miscellaneous items about *Acmaea*, particularly about those of our northeastern coast.

First, the trivial name *testudinalis* is derived from the Latin *testudo* a tortoise. Hence *testudinalis* means like tortoise shell, a good descriptive term for the shape and color of this limpet.

Acmaea testudinalis testudinalis Müller (hereinafter referred to as simply *Acmaea testudinalis*) grows to 1-1/2 inch in length. It occurs from Long Island Sound at Connecticut to the Arctic Seas and, in British waters, north of the Humber, North Wales and North Ireland. These ranges are in cool to cold water, their southern limits being just outside the influence of the Gulf Stream. *Acmaea testudinalis fergusoni* is a subspecies of *A. testudinalis*. It grows to almost one inch in length and ranges from Cape Cod southward to the northern shores of Long Island. The form formerly called *A. testudinalis alveus* Conrad, which still is mentioned in some older shell books, is now known to be merely young shells which happen to rest on narrow eel grass. Hence their sides are much compressed. As the animals mature or as the eel grass dies, the limpets attach themselves to stronger substrates and develop normally.

Most books give the common name of *A. testudinalis* as "the tortoise-shell limpet." In Abbott's publications it is called "the plate limpet," which is also apt as the *Acmaea* are in the superfamily *Patellacea* and *patella* is Latin for small pan, or dish (and knee cap).

The *Acmaea*, like all archaeogastropods, are herbivores and are found at and below the low tide line clinging to algae-covered pebbles and rocks. One way to spot them in the field is to look among the pebbles for one bearing a dime-sized dark spot encircled by a light band. This is fine when the *Acmaea* has grazed a circle of algae from a light-colored pebble, but doesn't help much when the substrate is dark. The radula of this archaeogastropod is of the simple type known as *docoglossate* (beam-tongued). Under low magnification the grazing teeth appear as dark, squarish bars in a series of fives, like the pattern of 5 pips on dice.

Some species of *Acmaea* are hermaphroditic and a few may be protandric that is they switch from male to female as they grow older. Most of the family Acmaeidae shed their eggs and sperm directly into the sea, developing planktonic larvae, but in *A. testudinalis* fertilization takes place internally, sperm from a clinging male being directed to the area of the female opening by the action of cilia on the underside of the mantle skirt. Further, *A. testudinalis* deposits a mucoid mass in which a single layer of eggs is embedded. These hatch as swimming larvae.

A. testudinalis is the only *Acmaea* of the northeastern coast, but there is one more species to be mentioned here. It is the Arctic *A. rubella* (*rubella* is Latin and means reddish). The late Gunnar Thorson studied *A. rubella* and discovered it to be hermaphroditic and, most interesting of all, ovoviviparous!

A few specimens of *A. testudinalis fergusoni* were brought home for the aquarium. It was during their breeding season (which is April to July in New England) but they did not survive long enough for any observations, even of feeding, to be made.

Of the literature consulted, practically all the biological information was found in THE INVERTEBRATES, Vol. 6, Mollusca I, 1967, by Libbie H. Hyman (page 301), and BRITISH PROSOBRANCH MOLLUSCS, 1962 by V. Fretter and A. Graham (pp. 322-324 M. A. Wilcox, and p. 502). Other informative notes were found in publications by Bousfield 1960, Coomans 1962, DeKay 1843, Hever 1970, Jacobson & Emerson 1961, Morton 1958, Poirier 1954, and Webster 1944.

Abbott (SEASHELLS OF NORTH AMERICA) 1958, p.64) reports the spawning of *Acmaea* as it takes place in *testudinalis*, omitting mention that there are variations in reproductive methods within the genus.

Binney in Gould's INVERTEBRATA OF MASSACHUSETTS (1870, p.267), who calls the species *Tectura testudinalis*, lists all the synonyms under which this species was known. There are many, including *tessulata* Müller, which is now known to be a European form.

PUBLICATIONS RECEIVED:

Proceedings of a Symposium on Rare and Endangered Mollusks (naiads) of the U. S. edited by S. E. Jorgensen and R. W. Sharp., U. S. Dept. of the Interior, Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife, Region 3, Federal Building, Fort Snelling, Twin Cities, Minn. 55111. 79 pages, 21 figures.

Wellington Shell Club. Study on Muricidae. June 1971. 6 pages, mimeographed.
Galveston Shell Club Newsletter, number 62. September 1971, 4 pp., hectographed.

Miami Malacological Society Quarterly. Fall 1971. Vol. 5, No. 2. pp. 11-21.

Chicago Shell Club Newsletter. Sept. 1971. 7 pp. hectographed.

Newsletter Boston Malacological Club. Vol. 3, No. 1, Oct. 1971. 1 page, xeroxed.

RAMBLINGS OF TWO SHELL COLLECTORS IN FLORIDA

by Dupuy Greer

On February 26th Dupuy and Marie Greer, New York Shell Club members, started for Florida in quest of shells to give to children in hospitals and schools. We arrived at Ft. Myers, where we were to stay for three weeks, just in time to visit the Sanibel Shell Fair and see Rusty Bennett's marvelous desplay which won the duPont prize.

Using Ft. Myers as a pivotal point, we combed the beaches and mud flats within a 60 mile radius. It was surprising how many beautiful dead shells washed up on the beaches, especially at Bonita and Boca Grande. At Sanibel, Marie found her first golden olive and I found my first Ficus communis with the animal intact. It was partially dead but in good condition. It was promptly put in a formaldehyde solution.

I had been told that Pinna mollusks were edible, so we went over to Bokelia on Pine Island and dug up a dozen live ones. Cutting out the adductor muscles, which look very much like bay scallops, we had a fry the next morning for breakfast. They taste exactly like bay scallops but are a bit tougher.

After leaving Ft. Myers we spent a week at Marathon. Here on the Keys we found beautiful Star shells, Strombus raninus, Vase shells and Nerites. Marie found two Jewel Boxes fused together, one yellow, the other lavender. On the beach near Key Colony we found dead Star shells and lots of Worm shells.

From the Keys we drove north to Riviera Beach where we spent two weeks. Here we did most of our shelling in Lake Worth. We worked up to Jupiter and as far north as Stuart. At Stuart we collected a carton full of Pectens for the children. At one spot, not too far from Jupiter, we found three immature Strombus pugilis and at another spot some very beautiful S. alatus. One, with a mahogany interior, is the most beautiful I have ever seen. Here, also, we have found two live Hairy Tritons (Cymatium), Strombus costatus, S. raninus, S. gigas, Natica canrena and Oliva sayana.

From the east coast we went way over to Cedar Key on the Gulf of Mexico. Here can not only be found beautiful Angel Wings (Cyrtopleura) but probably the most delicious oysters in the U. S. If you hit the right tides and the wind does not blow too hard from the Gulf, you are in business. If the wind blows real strong from the Gulf, the water gets very muddy. Anyway, there are those delicious oysters (in season), and the Whitman Museum is well worth seeing.

After a week at Cedar Key we headed for home, stopping off in Greenville, South Carolina, to visit the crippled children in the Shriners Hospital. This was our fourth visit and we received a warm welcome. Dupuy gave a short talk to the young patients and Marie distributed shells to all.

Look at things closely enough to enjoy them. Because the longer and harder you look at any living creature, the more marvelous you find it to be. -- READERS DIGEST, June 1965. (Contr. by Corinne Edwards)

NYSC NOTES NUMBER 176 NOVEMBER 1971

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THE AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: Sunday, DECEMBER 12, 1971, at 2:00 P.M. in ROOM 319

PROGRAM: BIVALVIA - MALACOLOGY FOR THE SHELL COLLECTOR, CONT'D. Morris K. Jacobson.

SHELL OF THE MONTH.

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Seashell safari to the Solomons. R. Tucker Abbott p. 3, 4, 5

Acmaea testudinalis or Acmaea tessulata..... p. 6

Beginning with the December meeting, several glass-topped display boxes will be available to members to show off prized specimens, or to get help in identifying those puzzlers. Good locality data, please. It is hoped that this feature will provide a lively activity at future meetings.

CORRECTION: NOTES No. 175, October 1971, page 2 -- Anthony D'Attlilio points out that the type-species of the genus Latiaxis is L. mawae Griffith and Pigeon; Babelis Requien is the type species of the genus Babelomurex.

We are pleased to announce the exchange of our NOTES with the "Correspondentieblad van de Nederlandse Malacologische Vereniging", the mimeographed publication of the Malacological Union of The Netherlands. We hereby acknowledge receipt of the following numbers:

No. 140, February 1971, pp. 1577 - 1596

No. 141, March 1971, pp. 1597 - 1602

No. 142, June 1971, pp. 1 - 20

No. 143, September 1971, pp. 21 - 36

With No. 142, a new size format begins, hence the new pagination.

MINUTES OF OCTOBER 1971 MEETING

Three speakers, all Club members, provided the program for our 202nd meeting, in October.

Bill Old presented the second half of his description of the adventures and misadventures of Ameripagos '71, a group collecting expedition to the Galapagos. The major foul-ups in this installment: The group expected to be the first to use the new research vessel, Beagle III, but its completion had been delayed, so they travelled among the islands in a series of fishing boats. And, although the expedition lost 12 days in getting transportation from the mainland to the islands, it beat the arrival of its equipment by 17 days - during which two of the women members had no clothing of their own except bathing suits. Nevertheless, the venture was at least mildly successful, and the Angemeyer family, hospitable and helpful, did much to make it more pleasant. Bill showed a number of slides, not only of shells but also of iguanas, sea turtles, birds and sea lions.

Karl Jacobson continued his series of talks on molluscan systematics, this time concentrating on the Mesogastropoda. He noted that this mid-group in evolutionary development includes both holostomatous families - snails without siphons - and siphonostomatous types, with lips interrupted by channels for siphons. He also pointed out that while about half of the Archaeogastropoda are represented in the fossil record as extinct families and genera, few of the Mesogastropoda are, because of their later appearance. The Neogastropoda have no extinct fossil families. Karl illustrated characteristics and classifications with slides.

President Mart Hulswit reported on the periods during his summer vacation trip to Europe when he visited the Zoological Museum in Amsterdam, the Royal Museum of Natural History in Leyden, the Teyler Library in Haarlem and the Senckenberg Museum in Frankfurt. In the latter he made a new friend, Dr. Adolf Zilch, the curator of mollusks. He told how Dr. Zilch had saved the cream of the institute's specimens and literature from destruction during the war by transporting it to various places in the countryside. Mart's museum travelogue was well illustrated with slides.

Milton Werner

PUBLICATIONS RECEIVED

Australian Newsletter, new series No. 13, 12 pp., off-set, Apr.30, 1971.

The Conchologists Newsletter, Conchological Society of Great Britain and Ireland, No. 38, Sept. 1971. pp. 215-229, mimeographed. Contains a preliminary list of the molluscs of the Firth of Forth and adjacent seas.

Newsletter, Boston Malacological Club, Vol. 3, No. 2, 1 page, xeroxed.

Galveston Shell Club Newsletter, No. 64, No. 1971, 4 pp., hectographed.

Of Sea and Shore, Vol. 2, No. 3, Fall 1971, pp.106-154, profusely illustrated. Well worth the $3.50 subscription price. Address: P. O. Box 33, Port Gamble, Washington 98364.

Notes on the Occurrence of L. ruber and C. apiculata in Local Waters

John A. Black
Suffolk County Community College, Selden, Long Island, N. Y.

The presence of the chitons Lepidochiton ruber (Linnaeus) and Chaetopleura apiculata (Say) while considered common in Long Island Waters (Miner, 1950) are seldom encountered by collectors confined to the intertidal areas. These species are, however, commonly collected in the inner neritic waters bordering Long Island, Gardiner's Island, and Shelter Island. All chitons discussed here were collected in a bar type bottom drag with a 0.3 meter opening.

One specimen of L. ruber was collected in Mount Sinai Harbor in a water depth of 2.5 m on a muddy bottom on 12 May 70.

C. apiculata is commonly collected in the waters offshore of both Gardiner's Island and Shelter Island. One specimen was collected on 1 April 71 on a sandy bottom in 10 meters of water off of the east coast of Gardiner's Island.

On 4 April 71 two and on 24 April 71 a total of seven specimens of C. apiculata were collected on a sandy bottom in 8 meters of water off of the north shore of Shelter Island opposite Greenport. All of these specimens were attached to empty Crepidula fornicata shells.

On 12 October 71 two additional specimens were collected from the same location offshore of Shelter Island.

Literature Cited: Miner, Ralph Waldo. Field Book of Sea Shore Life. New York: Van Rees Press, 1950

SEASHELL SAFARI TO THE SOLOMONS

by R. Tucker Abbott

Thirty-two years ago, I was prepared to investigate the British Solomon Islands. My passage was booked, my trunks were loaded with tobacco twists and trade beads, I had charts of the South Seas, and knew enough pidgin English to ask the way to the reefs and where to get shells. I got as far as Fiji and ended up living awhile with the Samoans, but no Solomons. Twenty-four years ago, I again packed, this time with a revolver, a Navy code book and bottle of anti-malarial pills. I got as far as a muddy landing on Leyte Island, Philippines, and ended up in the interior of China, living with surrendered Japanese, but still no Solomons.

Ten weeks ago, Sue and I made our air reservations, packed our suitcases with flippers, masks and regulators, and six meals later we were in the heart of the Solomons on Guadalcanal Island. We landed at the very small but modern Henderson Field, and picked up our Avis Rent-a-Car to drive into the well-groomed capital, Honiara. The Mendana Hotel by the sea was clean, air-conditioned, and a scotch and water was 25 cents. It seemed like only yesterday that the same airport was nightly shelled, and that the now clean beaches were awash with the debris of war. But during our next five weeks of diving and shelling in Tulagi, Florida Island, Malaita and Guadalcanal, the ghost of World War II came upon us suddenly and unexpectedly.

One afternoon, between scuba dives, Sue and I were relaxing by having a leisurely snorkel on the north shore of tiny Gavutu Island in the shadow of larger Tulagi. The water was 76°F, the bottom, 2 to 10 feet away, was a gentle sandy slope, and the visibility was about 50 feet, which was fairly good for the Solomons. We cruised about, duck-diving for large, colorful Terebra auger shells and smaller, glossy olives, both of which made tell-tale trails in the sand. Then we spotted a wreck in shallow water, but as we approached, we realized it was not one of the many barges that dot the local bays. It was the almost perfect remains of a large Navy PBY flying boat. Curiously, her great aluminum hulk was largely free of marine growths. Corals were about her spewed-out engines, but her wings were remarkably clean, except for a number of large brown circles. We dove about 18 feet down and I then could see the circles were a rare worm-shaped snail that cements itself to smooth surfaces. Within a few minutes we had "crow-barred" off a collection of Dendropoma that would have been the envy of the Smithsonian or British Museum. This curious, stationary univalve cannot walk in search of food. Instead, it sends out long mucus threads, that serve as a sort of lasso. When the sticky, yard-long lines are covered with algal food, the snail nibbles them into its mouth, like an inexperienced spaghetti-eater.

Scuba diving would not have been possible for us in the vicinity of Honiara had it not been for two Australian professional salvage divers who were also fellow-conchologists -- Wally Gibbins, 41-year-old former world champion fish-spearer and owner of a 40-foot work boat, and his 27-year-old side-kick, Brian Bailey, famous for the large number of rare shells he has found. They had a compressor in a shed behind their Honiara home that served their commercial salvage operations, the local scuba diving club, and an occasional visitor.

Wally had a number of favorite sight-seeing diving spots near Honiara, several of them being at the sites of wartime wrecks, some lying from 80 to 200 feet in depth. If anyone wished to see a shark, it was only necessary to bang on the side of a wreck and wait a few minutes for them to loom up from the blue depths below. Most good shell collecting was done during our night dives. We worked in comparatively shallow water, from 40 to 60 feet. The local scuba club divers usually go night diving every week-end, when weather permits.

The underwater visibility throughout the southwest Pacific is poor near large, well-vegetated islands. Nitrogenous run-off from large rivers usually becloud the shore waters for about 2 or 3 miles offshore. Smaller, isolated islands, or such places at the very east end of Guadalcanal, are surrounded by crystal-clear, coraline or oceanic waters. Near large rivers, such as the Lunga, there is a thin lens of fresh water on top of the sea, causing a blurred vision for the first 2 or 3 feet.

Although the water is warm compared to that off eastern United States, we and local European divers always wore a light-weight wet suit. The only two minor dangers that had to be kept in mind were rubbing up against long-spined sea urchins and touching either the stonefish or feather fish. Venemous sea snakes, sharks and giant clams were rare enough or harmless enough not to be of much concern to local divers.

However, one of the first things that greeted us on arrival at our hotel was a sign on the beach, reading, "Because of sharks, swimming in these waters is unsafe."

For five weeks we dove at every opportunity, interspersing dives with forays into the mountains and up streams in search of land and fresh-water shells. By mid-July, we had over 400 pounds of scientific specimens for the Delaware Museum of Natural History. Homebound, we sampled scuba diving off Suva, Fiji, where the visibility and facilities were poor, and the big island of Hawaii, where visibility and underwater scenery were excellent, but shelling poor.

SNAIL WATER FOR JAUNDICE 1700

"Take a peck of snail shells, lay them on a hot hearthstone before the fire until they have done hissing and spitting, then wipe them from the froth and break in a mortar. Have a quart of earth worms, slit and scoured clean with salt and water and heat them with the snails. Then take angelica, celandine, woodsorrel, agrimony, bearfoot, barberry bark, great dock roots of each two handfuls, rosemary flowers a quart, 1 lb. of hartshorn, turmeric and fenugreek 2 oz. of each 1/2 oz. of powdered saffron and 3 oz. of cloves fresh beaten. Shred and infuse all in 3 galls. of ale, then distil and draw off. Three spoonfuls in a glass of sack before every meal and use moderate exercise".

Reprinted in Water in England, by Dorothy Hartley (1964).

"---A French scientist, Dr. Felix d'Autrec, has come up with one repulsive but true recipe for that favorite French dish, snails with garlic butter. It happened just after World War Two when snails were in short supply. But nonetheless it could happen now. The snails were made from waste rubber, reduced to a powder mixed to a paste, moulded to look like snails, then soaked for 48 hours in a liquid guaranteed to give them a savory taste. After that they were inserted into real snail shells. What's more, says the good doctor, artificial snails can be digested just as easily as real ones.

Gustatory note from the Long Island Press 6/18/67.

A CURE FOR RUST-STAINED SHELLS.

"Many well-preserved fossil shells are made unsightly by iron oxide. Rust stains on recent shells were considered permanent. There is a product called REDU, by AMWAY through door to door salesmen. The instructions for clothes works for shells. Use one-half a teaspoon of the white powder to one-half a cup of water. I have soaked badly stained shells, both recent and fossil, longer than suggested and in a stronger solution and it does them no harm."

Muriel Hunter -- Miami Malacological Society.

ACMAEA TESTUDINALIS OR ACMAEA TESSULATA: AN EXPLANATION AND APOLOGY

Morris K. Jacobson

While preparing the fine article by Dorothy Raeihle on Acmaea testudinalis in the last number of these NOTES, the editor misunderstood the author's comments in the last paragraph and wrote that A. testudinalis is an American species and that A. tessulata is European. This is not what Mrs. Raeihle had said and is quite incorrect. The truth is that there is only one species common to both shores of the Atlantic. The question is which one of the two names is to be used. Some British writers use tessulata: for example, Fretter & Graham (1962:502) write of tessulata that it "also occurs on the Atlantic Coast of America and ranges from the Arctic seas to Long Island Sound" - evidently referring to testudinalis. R. T. Abbott (1954:105) on the other hand writes that testudinalis was "formerly referred to as tessulata Müller." Incidentally the German writer Nordsieck (1968:16) also calls the species testudinalis and lists tessulata as a synonym.

Normally such a problem is easily solved. The older name is selected as the valid one. But in this case this cannot be done because Müller introduced both names in 1776 on the same page 237, tessulata being species 2868 and testudinalis 2872. In older times to solve such a problem some writers used the so-called rule of page priority, that is, they selected the name which appeared first in the work. This may be the reason why tessulata was selected. However, the rule of page priority has been rejected by the International Commission. Instead the first reviser is given the privilege of selecting one of the two names. But who the first reviser is is not always easily determined. I found that in 1865 the English writer Jeffrys (p.248) wrote that tessulata is the young of testudinalis. He could just as well, of course, have written that testudinalis is merely the adult form of tessulata. However, though both names were, in the manner of the times, described with very few words in Latin (5 words for tessulata, 4 for testudinalis), the latter was further defined by the reference to a figure, whereas the former had no such reference. This is what probably induced many writers to use the name testudinalis, which now has come, it would appear, into more common use.

To complete this discussion, it should be pointed out that two more names were given to this harmless limpet by Müller: testudinaria, also introduced in 1776 on page 237, and tesselata introduced in 1779.

The writer of this NOTE again expresses his regret to Mrs. Raeihle for having unwittingly distorted her ideas.

LITERATURE CITED -- Abbott, R. T. 1954. American Seashells. Van Nostrand, 14 +541 pp., 100 fig., 40 pls.

Fretter, F. & A. Graham, 1962. British Prosobranch Molluscs. Ray Society, London. 16 + 755 pp., 317 figs.

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The NEW YORK SHELL CLUB meets on the second Sunday of each month, September through June, in

THE AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: Sunday, **JANUARY 9, 1972**, at 2:00 P.M. in ROOM 319

PROGRAM: REPORT ON THE GATEWAY NATIONAL SEASHORE -- Ann Hunter

SHELLS IN DEEP WATERS -- Nikos M. Spanakos

OBSERVATIONS ON HAMINOEA -- Dorothy Raeihle

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FLORIDA SHELL SHOW DATES 1972

South Florida Shell Show. Science Museum, Miami Jan. 28 to 30

St. Petersburg 25th Annual Shell Show. Treasure Island Auditorium, Treasure Island, Fla. Feb. 3 to 6

Broward County 8th Annual Shell Show. Swimming Hall of Fame, Ft. Lauderdale, Fla. Feb. 11 to 13

Sarasota 9th Annual Shell Show. Civic Center Auditorium, Sarasota, Fla. Feb. 11 to 13

Sanibel Shell Fair, Community Center, Sanibel Island March 2 to 4

Palm Beach County 13th Annual Shell Show, Science Museum & Planetarium West Palm Beach, Fla. March 8 to 12

THE MALACOLOGICAL COLLECTION, DEPARTMENT OF LIVING INVERTEBRATES OF THE AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK, NEW YORK

William K. Emerson

Chairman and Curator

Some of the earliest collections obtained by the Museum were shells. Among the more notable of these collections are those of John C. Jay (1874), which consists of some 13,000 species, D. Jackson Steward (1893), William A. Haines (1895), and James Arnold Constable (1901-1905). Of the numerous expeditions sponsored by the Museum, large collections of mollusks were obtained by the Lang and Chapin Congo Expedition (1909-1915), The Whitney South Sea Expedition (1929-1930), and the "Askoy" (1941) and "Puritan" Expeditions (1957) to the tropical eastern Pacific. The bulk of the mollusks obtained by the Templeton Crocker and "Zaca" Expeditions to the eastern Pacific (1936-1938) were transferred to this Museum by the New York Zoological Society, in 1959. The collection at the present time consists of more than 175,000 catalogued lots, totaling approximately 2,000,000 specimens. The collection is world-wide in scope and is especially rich in representatives of the fauna of the tropical eastern Pacific.

In 1960, the Department of Living Invertebrates was re-established with Dr. William K. Emerson as Chairman, the first resident malacologist ever appointed to the staff. During the years 1960 to 1964, a major reorganization of the molluscan collection was instituted with the support of the National Science Foundation. The services of Dr. H. E. Coomans, who is presently Curator of Mollusks at the Zoological Museum, Amsterdam, were obtained to re-arrange the collection according to modern classification.

Mr. William E. Old, Jr. was added to the staff, in 1960, to undertake general curatorial duties and to conduct a program of selective exchanges. Mr. Harold S. Feinberg, who joined the Department in 1968, curates the terrestrial gastropods, in addition to his other duties. Dr. William J. Clench (Harvard University), Mr. Morris K. Jacobson, and Mr. Anthony D'Attilio (San Diego Natural History Museum) serve as honorary Associates in Malacology, at the present time.

In the past decade, many members of the New York Shell Club have generously provided the Museum with well-documented specimens from their collections and have made special efforts to obtain needed material for the Museum when on field trips. Thus the collection has been enriched through the kind efforts of club members, and they have assisted in the development of this valuable reference resource for the study of taxonomic and zoogeographic malacology. The Museum's collection serves as a central repository for the greater New York City area, and the scientific collection and the superb malacological library are available to all qualified students of mollusks.

(Dr. Emerson is currently preparing an exhibit on New York State mollusca which will be shown soon at the Museum. Watch your Notes.)

PECULIARITY OF SOME SHELLS OF AN AGGREGATION OF CIONELLA LUBRICA (MUELLER, 1774)

Florentin Maurrasse

Lamont-Doherty Geological Observatory,
Columbia University, Palisades, N. J.

In most cases the shells of the widely distributed species, Cionella lubrica are yellowish corneous, subtranslucent, and glossy. In the dead specimens, after a while the shell turns opaque when exposed to natural weathering process. This is true for any translucent shell of the other species of land snails. In several instances, however, it appears that the opaqueness may show up in living specimens. This phenomenon has been observed in most of the individuals of a large population of Cionella aggregating on the grassy southeast shore of Clove Lake, Staten Island, New York.

In many of them the shell was entirely opaque, but in general the last whorl was still transparent with minor opaque speckles. This peculiarity appears in adult shells and in immature ones as well. The general form of the shells and the animals were on the whole identical to other individuals collected in many localities around New York. At first I thought the peculiarity could be due to bleach effect of sunlight since the area was pretty well exposed. Nevertheless, the ground level was shaded enough with cattails (Typha latifolia) and other small grasses to prevent such extensive "sunburns" even though it was the middle of August (1970). Other species found in the same conditions (such as Zonitoides nitidus) did not present this peculiarity.

Examined under the microscope the opaque zones of the shells revealed structures nearly inconspicuous to the naked eye. They appeared clearly superimposed to the initially translucent shell, and in numerous shells they showed well defined dendritic patterns (branching, tree-like) which spread out from several growing centers. This pattern is altogether comparable to similar dendrites often occurring on rocks and due to manganese-oxide. Unlike these manganese dendrites, the ones on the shells seem to grow beneath the thin periostracum, which suggests some parasitic algae or fungi. The opaqueness of the shell was thus due to the anastomosing of nets covering or destroying the translucent zones. The presence of this abnormality does not seem to affect the normal growth of the shell nor to bother the animal inside. The parasite may, in fact, be growing at the expense of the soft organic-rich periostracum and does not perforate the hard part of the shell. The exact nature of the parasite is to be determined.

This note is to make shell collectors of this species aware of the fact that in some cases opaqueness of a usually translucent shell does not mean necessarily it is dead.

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RED TIDE BAD FOR SHELLS

Maude W. Meyer

Sanibel-Captiva Shell Club

Some weeks ago request was made for anyone on the islands of Sanibel and Captiva to report any damage they had noticed to the mollusks as a result of last summer's red tide. The information which follows was obtained from one motel owner, four shelling guides, one marine biologist and a number of just plain interested shellers who were observant.

South side of Sanibel, from the "Tradewinds" to the "Blue Dolphin" motel at the rocks:

> _Polinices duplicatus_ (shark eye) In piles by the thousand, with mouth parts diseased. Some shells eroded, as was even the operculum in some specimens.
>
> _Oliva savana_ (olive) Again, thousands washed up dead with the mouth parts deseased.
>
> _Sinum perspectivum_ (lady's ear) About one hundred in similar condition.
>
> _Donax variabilis_ (coquina) Beach littered with closed shells containing dead bodies, which neither the birds nor ants would touch.

South side of Sanibel, area of steamboat. (also lower part of Bonita Beach):

> _Anomia simplex_ (jingle shells) Beaches littered with double valves, again with dead animals. As any sheller knows, any doubles except the very smallest are hard to find at any time, and no one we have contacted remembers them coming in in such quantities -- at least during the last twenty years.

Bay side of Sanibel from the causeway west to Woodring Point was very badly hit, though across San Carlos Bay the Pine Island side seemed to escape with little damage:

> Eel Grass and Turtle Grass - all brown and covered with slime, with no sign of any snails. A later report was that both the eel and turtle grasses were showing signs of green at their roots, and those at York Island over near Pine Island's St. James City were free of slime and beginning to produce.
>
> Shrimp (bait size) - Are coming back, also a few small blue crabs.
>
> _Ostrea frons_ (coon oyster) - Gone from the mangrove.
>
> _Crassostrea virginica_ - Gone.
>
> _Mercenaria_ (hard shelled clam) - Seemed to be okay, although it was the first one banned in the taking of shellfish.

Blind Pass area (Blind Pass is the waterway between the islands):

At the beginning of the red tide the flats were a mass of dead mollusks. Later there were masses of dead shells of the lightning whelk, angel wings, horse conchs and shark eyes piled under the mangroves. Melongena corona (king's crown) not killed off so much. Two large ones found on piling at Tarpon Bay and the smaller ones seemed to have a lower death rate. Perhaps many small ones were still within their egg capsules at the time of the red tide.

Upper Captiva:

In areas on the east side where many species and fiddlercrabs were abundant, there was not a sign of anything living.

Captiva and Roosevelt Channel (Roosevelt Channel runs between Captiva and Buck Key) did not seem to suffer as much as more exposed areas.

This report is just the result of natural curiosity brought on by realizing that it was the bottom feeding fish that were killed in such quantities and wondering how the mollusks, which are also bottom feeders, had fared.

As of November 6th, reports are that some Conus spurius atlanticus have been found, even one large one, barnacles and Anomia simplex in small numbers, many small Melongena corona, some small Busycon contrarium and a few Pleuroploca gigantea. Cyrtopleura costata L. (angel wings) are absent. We know of only one specimen that has been found alive though there are many dead ones.

Experanza Woodring, one of the real old time shelling guides, says that the last bad red tide was 25 years ago and that it took five years for the mollusks to recover.

Our next step was a presentation on Nov. 9th to the Executive Board of the Conservation Foundation with the request that we get professional help on deciding what should be done. A few weeks later we were heartened to learn that, at the request of the Conservation Foundation, the State is sending marine biologist William Lyons down for a survey. We hope that a bag limit will be imposed on the taking of live shells. But there will probably be a howl from some (not all) of the motel owners and many of the tourists. Our four shelling guides have been most co-operative as has also our Fish and Wildlife technician and marine biologist who is in charge of all programs in the Lee County schools.

(A dinoflagellate, Gymnodinium breve, exists in the Gulf waters off Florida's western coast, harmless in its normal numbers of about 1,000 to a quart. But with just the right combination of temperature, tide, and mixture of saline Gulf waters with fresh waters from rain and river runoff, the population explodes to around 60,000,000 to a quart. The sea turns sirupy and reddish. Fish are poisoned and pile up for miles along the shore.....

...... From: Paul Zahl in NATIONAL GEOGRAPHIC, Feb. 1961)

ON THE ENDANGERED MOLLUSKS OF THE GREATER NEW YORK CITY AREA

Morris K. Jacobson

The New York City area is peculiarly unsuited to support a rich molluscan fauna. The land shells are restricted in variety and numbers because of the removal of soil cover during Pleistocene glaciation, and the present soils are largely acidic in character and poor in calcium which is required for the production of their limy shells. The marine fauna is equally impoverished by a hydroclimatic regime in which the seasonal range of temperature is cold enough to restrict largely the presence of more southern forms, and many of the more northern intertidal species are restricted to the colder deeper waters off the New York coast. The fresh-water molluscan fauna of the northeast is about as varied and numerous as that of England and northern Europe. The variety of local fresh-water shells, however, is poor indeed when compared to the central states and the Ohio-Mississippi drainage, which is believed by some to have the richest fresh-water molluscan fauna in the world.

To this natural depauperization, man has added his adverse effects. Harbor pollution has wiped out whole populations of marine mollusks. Marsh snails vanish when the wetlands are destroyed by land fills. Industrial and other pollutants kill many fresh-water mollusks.

Yet, paradoxically, no species seems to have disappeared entirely. Faunal lists of the 19th century show that almost all the species which were found then can still be collected here today. Of course, as noted above, species have disappeared from individual areas. Thus the only record of the hirsute pill snail (Stenotrema hirsutum) from Long Island was from Bay Ridge in Brooklyn, the site today of closely spaced apartment buildings. But the species is not uncommon in neighboring Westchester and Rockland counties and Bergen County, New Jersey. Similarly, the purple wentletrap (Epitonium rupicola) seems to have vanished very recently from Ward's Point in Staten Island, but it may very well still exist in neighboring Nassau and Suffolk counties, and it is present in New Jersey. The same is true of other terrestrial and aquatic species as well.

Not only are almost all the same species still found here, but they apparently also occur in approximately the same comparative numbers. When a species is rare today, it was rare also in the 1800's. For example, the fragile razor clam (Siliqua costata) is rare here today, but Smith and Prime found it to be rare in 1870 at Rockaway and Coney Island, where occasional specimens can still be picked up. On the other hand, species common then are common today. Such as the soft clam (Mya arenaria), the Baltic macoma (Macoma balthica), the slipper shells (Crepidula fornicata and C. plana, etc. Specimens of the soft clam found today are on the average smaller than those collected years ago. Moreover, several species never found before in the New York City area have recently been inadvertently introduced and have become a conspicuous element of the local fauna. Such are the English garden snails (Cepaea nemoralis), the round disc snail (Discus rotundatus), the garlic cellar snail (Oxychilus alliarius) and others which arrived from Europe; the Chinese mystery snail (Viviparus malleatus), an immi-

grant from the Far East released by aquarists; and the common mystery snail (Viviparus georgianus), and a few others which came to us from Upstate. 1

Of course, no absolutely quantitative comparisons can be made since round figures are hard to come by. We may well have fewer specimens of mollusks alive here today than in earlier times, but no one can be certain. However, even if this is so, mollusks can make a quick comeback when conditions, expecially of the neighboring aquatic and terrestrial environments, improve. And conversely, of course, if we create many more sewage laden "dead seas," such as the New York Bight, off Sandy Hook, the situation may become much worse. So, far, mollusks seem to have done pretty well in our area as a whole. It remains to be seen how they will fare in the future.

[1] See Jacobson and Emerson, 1971, "Shells from Cape Cod to Cape May, With Special Reference To The New York City Area," Dover Publications, Inc., New York, 167 pp., illus., for more complete lists and descriptions.

COLLECTION FOR SALE

Extrafine quality shells, representing many years of work, includes World Wide Conus, Voluta, Mitra, Oliva, bivalves, land shells, common, semirare, and some rare.

No lists. Sacrifice. Collection can be seen on Wednesday afternoons and on Sundays.

Write: Nick Katsaras
479-B So. Washington Avenue
Bergenfield, New Jersey 07621

The art of faking shells has not completely disappeared. Last summer at Key West, a shell dealer was observed making knobs to replace broken ones on Lyropecten nodosus. He carefully molded and painted knobs on the Lion's Paws he got from shrimpers and distributed them to Northern dealers. His comment was that he was restoring their beauty, and that he had just as much demand for the specimens.

.......TEXAS CONCHOLOGIST, October, 1971.

DELIGHTFUL CORRECTION: On p. 90 of SHELLS FROM CAPE COD TO CAPE MAY by Jacobson & Emerson we wrote: "...the East River near Hell Gate, where we are sure no mollusks of any kind have lived for generations." Mrs. Marjorie Bogart of East 86 Street wrote on Nov. 28: "Last summer and again yesterday my husband and I found Mya arenaria, Brachidontes demissus, and Littorina littorea living on the Wards Island shore of Hell Gate under and to the west of the Triboro Bridge...Can these be harbingers of improvement in the quality of these waters?" We certainly hope so and are more than happy to make note of this correction of our text.

MKJ & WKE

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NYSC NOTES NUMBER 178 JANUARY 1972

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THE AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: Sunday, FEBRUARY 13, 1972, at 2:00 P.M. in ROOM 319

PROGRAM: WEST COAST CHITONS -- A Shellecture, by Glen and Laura Burghardt, authors of the booklet of the same title. With eighty slides.

THE PELECYPODA (Cont'd.) -- Morris K. Jacobson.

SHELL-OF-THE-MONTH.

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MINUTES OF THE DECEMBER MEETING

In the first of two Shell-of-the-Month presentations, President Mart Hulswit first spoke on the deep-water species, Astraea heliotropium Martyn, 1784, and showed Martyn's first illustration of the shell, and a 4-inch specimen with operculum. The type was collected from the anchor cable of one of Capt. Cook's ships on his second voyage around the world in 1773, in Cook Straits, New Zealand. Maria Walter then showed a fine 3-inch specimen of Murex burnetti Adams & Reeve, from Korea. Albert Taxson had with him a smaller specimen of burnetti.

The chief speaker was Karl Jacobson, who continued his series of talks on systematics. He first displayed a copy of "Shells from Cape Cod to Cape May," which is a new reprint of "Shells of the NY Area," written by himself and Dr. William Emerson. Karl's subject for the day was the Class Bivalvia, which he said arose from ancient forms resembling limpets. The class is now at the peak of its size and diversity, and there is little agreement among workers on its systematics, even in the highest taxonomic divisions. Karl follows Thiele's and Morton's classifications, in which there are 2 subclasses and 7 orders. Thiele relies heavily on shell features, especially the construction of hinge-teeth. His subclasses are Protobranchia and Lamellibranchia. Karl outlined the families and genera in the four orders of Lamellibranchia - the Taxodonta, Anisomyaria, Schizodonta and Heterodonta.

George Raeihle then showed a number of slides from vacation trips of a number of years, to the Florida Keys and to Jekyll Island in Georgia. He also included pictures of the collecting area at Bayville, Long Island and many of living specimens.

MW

ARE MARINE MOLLUSKS ENDANGERED?

R. Tucker Abbott

The survival problems confronting marine species, although somewhat similar to those facing the land and fresh-water forms, are quite different in severity, manner of endangerment, and nature of possible remedial measures.

Marine mollusks do not appear to be endangered in the same sense as are many birds, mammals, and fresh-water mollusks. In my considered judgement, there are few, if any, marine species of mollusk anywhere in the world, being led to extinction because of the activities of man. This, however, is mainly because the distribution of every species of marine mollusks is either very extensive over many hundreds of linear miles, or, in the case of a few highly endemic species, at least extended over many hundreds of square miles. Furthermore, bathymetric ranges in sublittoral species give additional protection.

Although no accurate figures are available, and, indeed, there is need for new studies along these lines, I would not hesitate to say that the well-known high mortality rates of marine mollusks are largely due to the activities of man. Commercial fisheries would probably account for the greatest cause of man's reduction of mollusk population; pollution and other environmental changes made by builders and engineers would probably come second; and shell collectors would make a very poor third.

From the distributional records being made by several research fisheries' boats and by casual dredging samplings by amateur conchologists and commercial shrimp trawlers, it would appear that there is a population band of Macrocallista maculata running from Alabama to central west Florida and from North Carolina to central east Florida, anywhere from 1 to 8 miles in width at depths ranging anywhere from 6 to 60 feet. This represents about 6,000 square miles of high density Calico Clam populations. The species incidentally extends through the Caribbean to Brazil. One might hazard a guess that about 2 billion bushes of this clam die every 5 years. Old age, fish, "red-tide", cold water, fungal diseases, and shifting bottoms probably account for most of these deaths. Of the 2 billion bushels, I doubt if shell collectors account for more than 1,000 bushels, and most of these would be specimens cast ashore after storms. A similar situation exists for the vast majority of the marine mollusks.

Are some marine species being over-collected? Yes. Expecially locally; and especially the larger and edible species. Are they in danger of becoming extinct? No. Is over-collecting bad? Yes, because it

reduces the density of the populations in certain areas to the extent that they are no longer available in commercial quantities (in the case of oysters, scallops, clams and edible whelks) or no longer present in sufficient numbers to satisfy normal, modest requirements of hobby collectors. Among the species that are being over-collected in certain limited areas are Strombus gigas (the Pink Conch), Cassis madagascariensis (the Helmet Shell), Pleuroploca gigantea (the Horse Conch), Cyrtopleura costata (the Angel Wing), Cyphoma gibbosum (the Flamingo Tongue), Melongena corona (the King's Crown) and edible clams, scallops, and oysters. Of all these species, the first 3 (Strombus, Cassis and Pleuroploca) are the least able to replace their numbers, and are becoming comparatively uncommon, but certainly not extinct.

In addition to over-collecting, and I refer mainly to that created by commercial fisheries' activities and professional shell gatherers who sell to shell dealers, far-reaching and much more serious consequences can descend upon shore mollusks and, of course, other forms of marine life, by man or engineering projects of man or by mass pollution of coastal waters by heavy metals, major heat transfers, massive oil spillage or altered currents. The filling of extensive marsh lands by real estate developers robs the coastal offshore waters of their life-giving source of nutrients. What's bad for a Melampus marsh snail is bad for a coastal shelf Junonia.

What practical protective measures are possible? Space does not permit me to discuss national pollution and conservation problems. Agencies of the United States government and well over 500 private foundations and organizations, such as the National Wildlife Federation and the Welder Wildlife Foundation, are actively working on these matters.

Over-collecting can be reduced by shellfishery laws and the dissemination of information among shell collectors. I have studied the shellfishery laws of each state, and in 1961 I published a digest of the laws of 24 of the U. S. states and Canadian provinces that have salt-water coasts (How to Know the American Marine Shells, Signet Key Book, KT 375, New American Library, Inc., N. Y. p.197-203). In this I said, "The laws were not created to annoy tourists or shell collectors or to interfere with students of marine life. Unfortunately, the regulations vary from state to state, and in many instances they are ambiguous, scientifically inaccurate, and self-contradictory. We recommend 3 general rules for collectors: cooperate with local wardens; ask local fishermen or ocean-front property owners about local restrictions; don't collect live oysters at any time. Beware of Sunday "blue law" restrictions, especially in eastern Canada and New Jersey. You may write to the director of fishery agencies for special collecting permits. Most states will issue them cheerfully without cost."

Many clubs are encouraging the conservation of mollusks. The Sanibel-Captive club in Florida was the first to initiate a program of local education by publishing posters, flyers, and booklets on "Don't Be a Pig." Other clubs have distributed "collecting creeds," urging members to take small samplings, rather than to pick up every specimen seen. Authors of popular articles and books are now urging the general public to collect in moderate numbers. These measures are helpful in

local areas. In some good collecting spots you can find a choice specimen only because a thoughtful and courteous collector was there just before your visit.

One of the most successful systems of protecting our wildlife was championed by President Theodore Roosevelt, who began our system of National Parks and Wildlife Preserves. This is an ideal mechanism of ensuring reasonable protection to undersea life in many areas. There are several underwater parks in America, the first being the Key Largo Coral Reef Preserve, opened in Florida in 1960. The Department of Mollusks at the Academy of Natural Sciences has made surveys in such island groups as the Seychelles, Indian Ocean, with a view towards outlining the methods of establishing underwater preserves that will not interfere with the rights and livelihood of the local people. Other governments, as in Malaya, British Honduras, and the Bahamas, are now taking active steps to protect sea life for future generations.

Reprinted from La Conchiglia, Rome, Italy. Vol. 3, No. 4, pp 11-12.

ON THE ROLE OF CLUB PUBLICATIONS

Morris K. Jacobson

Recently a new Cone was described and named in a shell club publication in Florida. The description does not meet the legal requirements of the Code of International Nomenclature, and the figures which accompany the description are unrecognizable. The name will in all likelihood not be recognized since a valid description by a recognized authority predates it. Nevertheless, it is unfortunate that this description appeared at all, and it has led to the following thoughts on the problem.

The large number of new club organs play a very important role in the development of malacology. They frequently print ecological and distributional facts of great value to scientists. Many reports on the behavior of living mollusks which have appeared in some of these periodicals, are of primary importance in this little-known field. But the club periodicals should not go beyond this area.

The naming of new taxa, because of the strict law of priority, is a tricky business. This is not the place to go deeply into the matter. But, it must be made clear that a taxon newly named is for all time, not just for today. It must always be regarded by anyone working in the group in which the new species was placed -- no matter how far in the future. This means that a student 50 or 100 years from now should have easily available a clear copy of the original description.

Now, the fact is that, useful as many are, most libraries and museums do not catalog the club periodicals. Even those who keep them on the shelves, do not take the trouble to make out library cards for them. Hence the future student will have to rely on the rapidly disintegrating supply of back numbers of such publications in the hands of private members. Even less likely is their preservation in the form

of microfilm, a device which undoes the damage done by the deterioration of poor quality of paper. For this and other reasons, and aside from all other questions of the legal requirements of the Code, shell collectors should refrain from introducing new names in the club periodicals. This would show that they have consideration for the work of future students in the field.

This does not mean that amateurs should refrain from naming species they are certain -- after carefully examining the literature in well-stocked libraries and museums, and after giving careful consideration to the newest concepts of species variation -- to be hitherto undescribed. Many amateurs have done so and many are doing so at present. But these descriptions should appear not in ephemeral club publications, but in accepted scholarly periodicals like the NAUTILUS and the VELIGER among many others here and abroad. Among other advantages, the author will at least be sure that his work has met all the legal requirements. Moreover, he can expect a certain amount of guidance from experts whose familiarity with the literature might prevent him from pulling some boners.

A GREAT MOLLUSCAN MYSTERY

Margaret Teskey

Two decades ago, Mr. John Q. Burch wrote with rightous indignation of a fellow Californian who had boasted that there would be some head scratching when the land shells he was transplanting up and down the coast began to be re-discovered. "Fortunately," said Mr. Burch, "This man is now dead." It is with somewhat similar emotion that I report this most recent molluscan mixup.

Where, but in a dream could one collect shells from the Philippines, Hispanola, Jamaica, the Mediterranean, all in one afternoon? Yet there they were, scurrying about in company with such of our native species as Melongena bicolor, Fasciolaria tulipa, every Neritina in the book? "Scurrying" is the key word, for these were all inhabited by the blue-clawed land hermit crab, Coenobita clypeata.

The mystery began to unfold two years ago when I picked up a fine fresh shell of Liguus virgineus, inhabited by a lively crab. I knew, or thought I knew that this shell belonged in Haiti. My neighbor Archie Jones (see National Geographic for March, 1965) was as excited as I, and gave up one of his precious fishing weekends in a futile effort to locate the colony we were certain was nearby.

He should have watched his feet instead of staring up into Jamaica dogwood trees to find the elusive L. virgineus. A year later, anticipating a market for the colorful hermit crabs to be sold in cricket cages as pets, with Ann Young I battled the mosquitos to search for them on the mud flats beneath huge mangroves at the ocean end of Big Pine Key.

Crabs a-plenty we found, then came upon one wearing the shell of Liguus virgineus, then another, and several sporting pure white helix-like

shells that neither could identify. Ann thought they had been discarded from a picnic featuring escargot. I couldn't buy that since the site was muddy, snaky, barricaded with sticky webs of orb spiders as large as birds. It was the last place in the world even a shipwrecked Frenchman would choose to eat a picnic lunch.

"Karl Jacobson would know!" So off to Rockaway Beach went half a dozen of the white shells, and by the time he had shot back the news that we had collected denuded specimens of Pleurodonte undulata belonging in Hispaniola, we had made even more startling finds: several Babylonia japonica, a Melongena paradisiaca, two massive Polinices that may or may not be P. hepaticus -- if so, the first to be collected around here.

We are now convinced that some joker has dumped a collection of foreign shells in this most unlikely of spots, to be appropriated by the grateful crabs, in turn to be discovered and collected by two puzzled malacologists. Any of the readers holding an amateur detective's license is cordially invited to come to the Keys to solve our mystery. Bring a forked stick to deal with any meandering serpent. We shall be happy to direct you to the site.

PUBLICATIONS RECEIVED.

Busycon Bugle, Broward Shell Club, Ft. Lauderdale, Florida. October 1971. Vol. 6, no. 10, 13 pp., offset, illustrated.

La Conchiglia, Rome, Italy. April 1971. Vol. 3, no. 4, 15 pp., illustrated, several illustrations in color.

Journal of the Malacological Society of Australia, Melbourne. September 1971 (published annually). Vol. 2, no. 2, pp. 97-214, numerous illustrations. A particularly important issue containing studies in the synonymies of Cymatiidae by A. G. Beu; revision of the family of Watering Pot shells Clavagellidae with two new species by B. J. Smith; revision of the Australian Tertiary Volutidae of the subfamily Athletinae by T. A. Darragh; a study of the opisthobranch family Acteonidae in New Zealand by W. B. Rudman and several other informative and important articles.

Shells from Cape Cod to Cape May with Special Reference to the New York City Area, by Morris K. Jacobson and William K. Emerson, Dover Publications, New York. 152 pp., numerous illustrations, soft cover, $2.00. This is a revised and enlarged republication of the 1961 edition published by Argonaut Press, Larchmont, N. Y. Unfortunately, the figure of Assiminea modesta, p.141, is not of this species.

AUSTRALIAN NEWSLETTER, Malacological Society of Australia, no. 14, 12 pp, illustrated. The cover has a picture of the third specimen of Cypraea guttata Gmelin known. It was collected "recently" in the New Hebrides and is in the collection of Lance Moore. No more information is given.

The Festivus, San Diego Shell Club. Through the generosity of President Carole Herts we have received an almost complete run of this interesting club organ.

JANUARY, 1972, SUPPLEMENT TO ROSTER OF NEW YORK SHELL CLUB

We welcome our new members, and bring you to date on changes in address since our supplement of June, 1971.

NEW MEMBERS

BAC, Mr. & Mrs. Joseph	250 East 65th St., New York, N. Y. 10021
CARL, Mr. Richard	1659 Greenway Boulevard, North Valley Stream, New York 11580
CHURCH, Miss Sarah	1380 York Avenue, New York, N. Y. 10021
COHEN, Mrs. Edith	1056 Fifth Avenue, New York, N. Y. 10028
D'AMICO, Mr. Mario E.	122 Rhode Island Avenue, Bayshore, New York 11706
DELYANNIS, Miss Pamela	51 Waldwick Ave., Waldwick, N. J. 07463
GERTLER, Mr. Frederick	231 Brightwater Court, Brooklyn, N.Y. 11235
GRIEB, Miss Severine	90 Park Terrace East, New York, N. Y. 10034
LATAWIEC, Mr. Raymond C.	625 East Curtis St., Linden, N. J. 07036
POH, Mrs. Mary	27 Fourth Avenue, Nyack, New York 10960
WONG, Miss Hazel	239 East 79th St., New York, N. Y. 10021

CHANGES IN ADDRESS

BERNHART, Mr. Horst	11/27-31 Ocean Avenue, Newport Beach, N.S.W., Australia, 2106
BUCKALTER, Adele	628 Acadia Drive S.E., Calgary 3, Alberta, Canada
DEGAN, Miss Sandra	60-37 59th Drive, Maspeth, New York 11378
EDDISON, Dr. Grace G.	District Three State Hospital, Paris, Kentucky 40361 (Temporary)
" (Effective April 1)	Box 249, Rural Route #3, Lemons Mill Pike, Lexington, Kentucky 40505
GARCIA-RAMOS, Manuel	P.O. Box 288, Inglewood, California 90306
KEEL, Mrs. Suzannah	Plantation Oaks, Apt. L-2, Columbia, South Carolina 29210
LA ROE, Dr. Edward T.	P.O. Box 2136, Naples, Florida 33940
MC MILLEN, Mr. & Mrs. David S.	Box 421, North Eastham, Mass. 02651
SKYTKOWSKI, Mr. Stanley	56 Park Avenue Terrace, Yonkers, New York 10703

NYSC NOTES NUMBER 179 FEBRUARY 1972

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NEW YORK SHELL CLUB NOTES No. 179 February 1972 Page 1

The NEW YORK SHELL CLUB meets on the second Sunday of each month, September through June, in

THE AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: Sunday, MARCH 12, 1972, at 2:00 P.M. in ROOM 319

PROGRAM: THE FORGOTTEN ISLANDS (Indian Ocean and Africa) by Myra Chaplin. With color slides.

THE PELECYPODA (Cont'd) by Morris K. Jacobson. With slides.

SHELL-OF-THE-MONTH

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NYSC SHELL-SOCIAL APRIL 9th:

Dorothy Jensen is again generously donating the use of her studio to the New York Shell Club for a springtime social meeting. Mark the date on your calendar now -- APRIL 9th. Plans include an auction of shells, a bargain table, door prize, raffle, punch, cocktails, buffet supper and getting to know you. Your donations of shells and related items will be needed, so start now to straighten out your collection, as you've been planning to do anyway, and set aside those extras for the auction. More details and directions to the studio in Astoria will be in next month's NOTES.

ALS ANNUAL SYMPOSIUM

The American Littoral Society will hold its fifth annual symposium, "Your Future in the Sea -- 1972", on Saturday, March 11th, at Hunter College, 69th Street and Park Avenue, New York City. The morning session will be devoted to "Careers in Marine Science", and will be free to all students. In the afternoon there will be panel discussions, films, slides, Q & A, and in the evening educational films, on a diversity of ocean subjects. For information and tickets (afternoon $2.50, evening $3.50, all day $5.00) write to June Kieser, 33-38 164th Street, Flushing, New York 11358.

1972 AMU MEETING

The Galveston Shell Club will host the 38th annual meeting of the American Malacological Union, to be held in Galveston, Texas, from

July 9 through July 14. Plans are being made for three* field trips besides the presentation of papers and annual banquet. Galveston, located on an island in the Gulf of Mexico, is a fascinating city. Members who plan to attend may look forward to a memorable meeting under the direction of AMU President Arthur S. Merrill.

Membership in the American Malacological Union is open to all interested persons. Dues are $4.50 yearly, plus $1 extra for each additional member of the same family. Apply to AMU Secretary Mrs. Marian Hubbard, 3957 Marlow Court, Seaford, New York 11783.

MH/r

(Further details and information as to registration and reservations will be given in these NOTES as they are received.) (* concurrent)

MINUTES OF JANUARY MEETING

The first of three speakers at the January meeting, all members, was Anne Hunter, who was recently appointed by the governor of New Jersey to that State's Waste Disposal Advisory Council. She spoke on proposals for the Gateway National Recreation Area, to occupy several locations around the triangular water area surrounded by New Jersey, Staten Island, and Brooklyn. The Sandy Hook location includes beaches, bayside coves and salt marsh, and is a haven for waterfowl, shore birds and other wildlife. The present park there is the most heavily visited one in New Jersey. Plans for it include bicycle and nature trails and environmental study areas. Proposals for the Great Kills, Staten Island location include facilities for group camping, picnicking, boating and fishing, and a cleanup to make swimming possible. Hoffman and Swinburne Islands are to be enlarged to 250 acres, and improved with promenades, outdoor cafes and picnic areas. The other areas involved are Breezy Point and Jamaica Bay, Brooklyn. The latter, while polluted, is rich in fish and wildlife, especially birds. Hearings on the project were held in Washington, D.C. last July. One presentation was made by New Jersey Citizens for Clean Air, of which Anne is vice president. She urged members to write to their congressmen, in favor of legislation to create the Gateway project.

Dorothy Raeihle spoke on collecting _Haminoea_ and observing them in tanks. She showed slides of the species _elegans_, _antillarum_ and _solitaria_, both live and as delicate, transparent, graceful shells. The pictures showed collecting areas in New York and Florida, and included several George Raeihle specials: close-ups of egg cases of each species and sunsets over a number of _Haminoea_ collecting areas. Dot reported that some eggs of _solitaria_ had hatched in her home aquarium, but that the young lived for less than three days.

The final speaker, Nikos Spanakos, described the dawning of his interest in shells, which then broadened to interests in SCUBA diving, marine biology, underwater photography and archeology. Shortly after learning to SCUBA, he opened a school of diving in the pool of the Hotel St. George in Brooklyn. He showed underwater pictures taken off Nassau and at Providencia Island, in the Caribbean off Panama.

Grace McDougall and Jerry Steele brought with them some dredged material from Watl Island, St. Thomas, Virgin Islands, and a number of pen shells from Bear Cut, Miami, which they put up for grabs.

MW

SHELLING ON BARBUDA

by Frank and Lee Nelson

"That unheard-of island" is a rather familiar phrase to anyone who listens to radio, watches television, or reads a newspaper. In these days of overpopulation, when coast-to-coast and transoceanic flights in several hours are commonplace, and man has walked on the moon, it is refreshing to find that there are still some relatively unknown and unspoiled, yet quite accessible, spots left in the world. Such a place is the island of Barbuda in the British West Indies.

Barbuda, with its 37 square miles, lies 30 miles north of and slightly east of Antigua, of which it is a dependency. Quite unlike Antigua, which is green and hilly, Barbuda is for the most part flat and dry. Except for a string of hills running along the eastern coast, most of the island is hardly more than a few feet above water. Nearly one third of the island is a lagoon, the remainder being densely wooded, with low trees and brush. At the southern end of the island there is one hotel and another is under construction. Near the center of the island, at the edge of the lagoon and bordering the air strip, is Barbuda's only town, Codrington, with a population of about 1,100.

We had heard that shelling on Barbuda was quite good, and while in Antigua, in August, we, together with our oldest daughter and our son-in-law, decided to go over for a day and see what we could find. After spending a large part of the previous day searching in vain for alcohol in which to preserve specimens collected on Antigua (a search which turned up, among other things, a bottle of what was apparently over-proof bootleg rum) we should have known enough to go well prepared. Foolishly, we took off with nothing more than clothes worn over our bathing suits, cameras, and snorkeling gear. We had been assured on Antigua that local transportation was available on Barbuda. What they neglected to mention was that, unless you are either prepared or lucky, local transportation is called "feet". Obviously we were not prepared, but we were lucky.

Barbuda is reached by flying from Antigua's Coolidge airport in a small nine-passenger plane, on LIAT. These flights go in each direction at 9:15 AM and again at 5:15 PM. Of course, in typical island fashion, they are seldom on time. The delightful thing about this way of life is that no one seems to become upset or angry. These placid people accept it with a smile and, unlike New Yorkers, probably don't know the meaning of gastric ulcers. At any rate, the flight was worth the wait of an hour. The day was beautiful and the water so clear that the submerged coral reefs could be seen from the air all the way over to Barbuda.

Our enjoyment began to wane, however, when we found ourselves abandoned in the middle of a strange island, not knowing what to do or which way to turn. Fortunately for us, we were approached by Mr. Eric Burton, a man of many interests and talents, who asked if he could help. As it turned out, Mr. Burton, who arranges hunting and fishing parties, among other things, was free for the day and took us in hand. And very capable hands they are! While hunting and fishing parties are apparently fairly routine for him, he seemed momentarily nonplussed to learn that we were after shells, of all things! After a quick recovery and some equally quick decisions, he supplied us

with a Land Rover and driver, and we were off to the beach.

On a better day he'd have taken us to Goat Island, lying somewhere off the northern end of Barbuda. But since there seemed to be some rough weather blowing up, he thought it best not to take the boat out. Instead, he sent us to the eastern side of the island, along the highlands, where the coast is generally rocky and the surf rough. Although we were told that the shelling would probably be poor at this time of year, we found the rocks to be covered with shells. Nothing rare or unusual, but in about two hours we had all we cared to take -- chitons up to 4" long, huge Nerita peloronta, as well as Littorina ziczac, Littorina mespillum, Tectarius muricatus, and Cittarium pica. The waves and the undertow were too strong for snorkeling, but in the beach drift we found the remains of many specimens of limpets, bubbles, cones, dove shells, murex, olives, and assorted bivalves. We had several collecting bags, but were totally unprepared for handling chitons. We tied them to bits of driftwood with pieces from a nylon rope which we unwound strand by strand; they weren't about to stay tied and we spent a large part of the return trip frantically retying them and trying to push them back under the nylon strands.

After about two hours it was time to return for lunch and the storm was obviously blowing up, so we gathered up our gear (minus one collecting bag that washed out to sea). The heavens opened just as we started to head up the path to the Land Rover. We got drenched, and the coatings of dust we picked up on the way out turned to mud.

While we were gone Mr. Burton had had lunch prepared in the home of one of his relatives -- a generous lobster salad, rice in the local style, bread and butter, and cold beer. No dinner in any of New York's better restaurants could have tasted better than that lunch in a little home in Barbuda.

After the rain stopped, our driver took us to the southern part of the island, where the beach has a decidedly pink color from the millions of tiny tellins in the sand. By this time we were tired and dirty, and the shelling was not very good, so we decided to head back to town and wait for the plane. By this time we weren't sure we were being stared at because we were obvious strangers on an island where everyone is at least acquainted if not related, or because we looked so disreputable.

We spent a delightful couple of hours at the airport, waiting for the plane which was, again, an hour late. The terminal building, about the size of a garage, seems like a clubhouse for the people on the island, with half of the island's children playing inside and out. Here we did as much staring as being stared at. The Barbudans are a handsome people, from our guide and friend Eric Burton to little Katie, in her yellow dress and ruffled panties. We hated to leave Barbuda, but we were happy to get back to the hotel and shower.

Considering the success that we had shelling on a "poor" day, in just a couple of hours, we are definitely looking forward to a return trip, and heartily recommend it to anyone for a day of shelling and relaxation. To insure a good day, though, be prepared. Sneakers are a must, if you should be planning to go to the eastern beach at the highlands; the rocks are as sharp as broken glass. Carry all of the

equipment you'll need with you. We didn't see anything resembling a store on the island. For transportation, Eric Burton may be reached by writing to him -- Barbuda via Antigua, British West Indies. It would be well to write in advance, to be sure that he'll be available and expecting you. His rates are quite reasonable -- $35 for the Land Rover and driver, for the entire day, and lunch for four people, plus "all the shell you can carry."

ON DEFORMATIONS OF THE SURF CLAM

Morris K. Jacobson

Mr. Bernard Blum of Rockaway Beach has been finding large numbers of deformed specimens of the Surf Clam (Spisula solidissima Dillwyn) on the beach at about Beach 60th Street. The posterior margin of these shells, instead of having a gradual slope to the rounded end, drops off abruptly. As a result the umbos, which are usually more or less central in the species, are transferred to the posterior section. Thus the shells resemble oversized Arctic Wedge Clams (Mesodesma arctatum Conrad) -- see Jacobson & Emerson, 1971, "Shells from Cape Cod to Cape May," p. 97. A specimen was sent to Dr. Arthur S. Merrill at the National Fisheries Service in Oxford, Maryland, who has written extensively on the species. His report follows:

> The deformed Spisula shells you sent are not unlike others we have seen from numerous collections at New Jersey beaches. Corrugations of the shell surfaces, indicating interruptions in normal shell deposition, and blunting of the posterior margins are both characteristic of surf clams from beaches where violent surf action occasionally takes place. We have assumed that the deformity results from the clams being washed out of the substrate by water currents during severe storms. Sand grains embedded between the mantle edge and shell probably result in new shell deposition to cover them up. Blunting may result from repair of actual breakage of the thin outer shell edge caused during the tumbling the clams get in the near-surf waters.

From this it would appear that for some reason the surf action off Beach 60th Street is more violent than that at other sections a few miles away, since such deformed shells are very rare or entirely absent a few miles to the west at Beach 140th Street.

PUBLICATIONS:

THE ROMANCE OF SHELLS IN NATURE AND ART

A new edition of THE ROMANCE OF SHELLS IN NATURE AND ART, by Louise Allderdice Travers, has been printed by Avenel Books (Crown Publishers, New York). 128 pp., with photos and drawings, the price $2.98.

The first edition was published by Barrows & Co. in 1962, when Rachel Carson wrote: "This is a book of real charm. To read it is almost as refreshing as taking an early morning walk on a beach freshly strewn with shells by the tide. But perhaps it is most memorable for its human interest story of the way a tiny shell transformed the author's life, opening doors upon a new world of endless interest."

We couldn't have said it better.

BOOK REVIEW

SEA SHELLS OF THE TEXAS COAST

by Jean Andrews. University of Texas Press, Austin and London, 1971. 12 + 298 pp., profusely illustrated, 9" x 11½". Price $17.50.

Mrs. Andrews has provided a boon to Texas collectors and a fascinating addition to the libraries of those who only rarely can add Texas shells to their collections. The book describes and figures more than 300 species of Texas marine shells commonly found in shallow water. It includes many smaller species which are often omitted by writers for the non-scientific community. Each description is accompanied by a black and white photograph placed with the related text, not separately on a plate in a different part of the book. This makes rapid reference easy. Photographs are not all to the same scale. The author wisely points out that small or tiny shells need to be illustrated as large as the bigger shells in order to show the small details on which the species are based. However, it would have been helpful if a scale line of actual size had accompanied the tiny fellows. But this can be added by the reader himself, since the dimensions are given in the accompanying description.

In addition to the systematic section of the book, the author has also enriched it with several other chapters dealing with related matters. Besides the usual discussion of mollusks in general, (Mrs. Andrews still uses the term Amphineura instead of dividing the designated organisms into Polyplacophora and Aplacophora, as is general today), there is a detailed description of the Texas coast, including its historical background and the currents which affect it; precise localities and stations for finding shells; expert advice on how to collect, preserve, and catalog the specimens; and hints on photographing tiny shells. There is also a complete section, with maps, dealing with an actual collecting trip and a fascinating description of what the beachcomber can find in addition to shells and other organisms, that is, such objects as naval flares, floats, and bottles. There are in addition an unusually complete glossary of scientific terms and some biographical notes on the malacologists whose names are attached to the scientific designations of the shells. The etymology of all scientific names used is given as well as a popular or English name to make discussion of the species easier. There are, of course, as in all such works, a number of errors, but all minor enough to be readily overlooked.

The book is a splendid typographical production with clear type, superbly reproduced photographs (the frontispiece is in color), stout binding and cover, and a pleasing dust jacket. The descriptions are given in outline form which leaves much open space and keeps the text from looking cluttered. However, all this has forced the publisher to put a rather high price on the work. And since only about 300 species are described, most of the larger ones being common also on the coasts of Florida, each non-Texas collector will have to ask himself if such an outlay of money is justified.

In brief, this book is an outstanding example of a well-researched, superbly illustrated, and excellently manufactured shell publication. The only drawback may be the high price for the relatively few species treated.

. . . Morris K. Jacobson

PUBLICATIONS RECEIVED:

TEXAS CONCHOLOGIST, Vol. VIII, Nos 1 - 5, pp. 1 - 60. (Those who become fascinated with Texas mollusks should become acquainted with the Houston Conchology Society and its monthly publication, the TEXAS CONCHOLOGIST. This costs only $2 per year for corresponding members and carries continuing chapters of NOTES CONCERNING TEXAS BEACH SHELLS, by Helmer Odé and Anne B. Speers, as well as other marine, freshwater and land mollusks. Write to the circulation editors, Mr. and Mrs. Sam Miron, 5238 Sanford Street, Houston, Texas 77035. -- Marian S. Hubbard)

ARGAMON, Israel Malacological Society, Vol. 2, Nos 3-4, Dec. 1971, pp. 57-112, offset. Contains a bibliography of all the articles on the Cypraeacea (cowries) written by F. A. and M. Schilder.

THE FRESHWATER SNAILS OF CENTRAL NEW YORK, by Willard N. Harman and Clifford O. Berg. SEARCH, Vol. 1, No. 4, published by Cornell University Agricultural Experiment Station, Ithaca, New York. July 1971, 68 pp., 194 fig.

This is a splendid review of the freshwater gastropods of New York. Practically all taxa discussed are figured and useful keys are provided for each unit. The authors follow the somewhat overrich taxonomical concepts of the late Frank C. Baker, especially in Physa. 544 stations are described, and they are referred to in the text by number alone, putting a burdensome collating task upon the reader. All in all, this is one of the most useful compilations, in spite of minor drawbacks, that the reviewer has yet come across. MKJ

MITTEILUNGEN DER DEUTSCHEN MALAKOZOOLOGISCHEN GESELLSCHAFT, Vol. 2, No. 21, pp. 297-381 (mimeographed), November 1971 (German). Contains two accounts of the sharp decline in numbers of the freshwater pearl mussel, Margaritifera margaritifera, in the streams of the Lüneburger Heide and elsewhere in northern Germany. Also an affecting account of the "Schneckenpfrarrer" (snail priest) Florian Schrott, from the Tyrol, who died in 1971 after a long life as country priest and enthusiastic alpine snail collector.

GOURMET'S CORNER

Common people are indifferent about the manner of opening Oysters, and the times of eating them after they are opened; nothing however is more important in the eyes of the experienced Oyster eater. Those who wish to enjoy this delicious restorative in its utmost perfection must eat it the moment it is opened, and with its own gravy in the under shell; if not Eaten while absolutely Alive, its flavor and spirit is lost .... The true lover of an Oyster will have some regard for the feelings of his little favorite, and will never abandon it to the mercy of a bungling operator, but will open it himself, and contrive to detach the Fish from the shell so dexterously that the Oyster is hardly conscious that he has been ejected from his Lodging, till he feels the teeth of the piscivorous Gourmand tickling him to death.

. . . Cook's Oracle, Harper, 1830

As quoted in "Marine Shells of Western Florida" by Perry & Schwengel, 1955, Paleontological Research Institution. (p. 42, footnote 26)

NYSC NOTES NUMBER 180 MARCH 1972

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The NEW YORK SHELL CLUB meets on the second Sunday of each month, September through June, in

THE AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: ANNUAL NEW YORK SHELL CLUB SHELL-SOCIAL

Sunday, APRIL 9th, 1972, at 2 PM *

THE PLACE: BROADWAY DANCE STUDIO (Phone: AS 4-1503)
31-08 BROADWAY
ASTORIA, QUEENS, NEW YORK (Directions below)

PROGRAM:
AUCTION
FILM PRESENTATION
BUFFET SUPPER
REFRESHMENT HOUR
RAFFLE
BARGAIN TABLE
HOMEMADE CAKES
COFFEE

Remember that your donations of shells, books, and any related items are needed to make our affair the enjoyable success it always is. No item is too large or too small! Bring them in early (*Doors open at 1 PM) so that they may be displayed. Don't forget the bargain table!

Our raffle prize, once again generously donated by Veronica Johns, is a brand new copy of the beautiful and important new shell book -- "Australian Shells" by B. R. Wilson of the Western Australian Museum. Chances on it are only thirty five cents! Three for a dollar!

Donations of those fine homemade cakes will be appreciated, as always, by our many gourmets.

We hope to make this party self-supporting. For this reason, it was voted to have a "cover charge". A donation of $3.50 per person at the door ($1.75 for children under twelve) will cover the cost of chair rentals, our sumptuous buffet, refreshments, etc. Members may bring guests who make the same contribution.

So come all, bring your shells, and be prepared to take some home as well. Look forward to a marvelous day!

DIRECTIONS: The studio is on the 2nd floor of the building, corner of 31st St. and Broadway. From Manhattan, B.M.T. subway, ASTORIA line to the BROADWAY stop and you're right there! I.R.T. FLUSHING line to Queensboro Plaza, free transfer to B.M.T. ASTORIA line. From Jamaica, IND. subway to Roosevelt Ave., free transfer to I.R.T. FLUSHING line, transfer again to B.M.T. ASTORIA line at Queensboro Plaza. BY CAR: Queensboro Bridge to Northern Blvd. to 31st St., left on 31st St. (Under the EL) to Broadway. Or Triboro Bridge to the first exit in Queens, turn right under the Elevated along 31st St. to Broadway. From Long Island, Grand Central Parkway to the last exit before the Triboro Bridge, a short distance along Astoria Blvd. to 31st St., turn left under the El to Broadway (about 6 blocks).

SHELL COLLECTING FROM STOMACHS OF THE SEA-STAR GENUS ASTROPECTEN

Hugh J. Porter
U. N. C., Inst. of Marine Science
Morehead City, North Carolina 28557

In a paper presented at the 1971 A.M.U. meetings in Cocoa Beach, Fla. (Porter, In press), I discussed, among other things, the micromolluscan fauna coincident with the calico scallop beds of North Carolina. This fauna was collected from stomach content samples of the sea-star *Astropecten articulatus* (Say). There has been, possibly from this, a renewed interest by some mollusk collectors in shells which may be found inside sea-stars. A paper published by Wells, Wells and Gray in 1961, on material found in digestive tracts of *A. articulatus*, collected off Ocracoke, North Carolina, stimulated our interest in this sea-star. Since then we have examined stomach contents from over 600 individuals from North Carolina waters south of Ocracoke.

What kind of sea-stars contain mollusks in their digestive tract? This depends upon possible food preference of the sea-stars and upon methods of feeding. Hyman (1955, p.369) lists two methods of feeding by asteroids (sea-stars). In one method, the arm of the sea-star will hold its prey, while the stomach is everted onto the prey, and the digested contents are sucked into the digestive tract.
The common *Asterias forbesii* (Desor), which occurs from Maine to the Gulf of Mexico and does so much damage in our northern oyster industry, is an example of this method of feeding and thus contains no recognizable mollusks in its gut. In a second method of feeding, the prey is swallowed whole - generally by those sea-stars with arms that are too short or too stiff. *Astropecten*, *Luidia*, etc. are examples of this latter method of feeding.

Wells, Wells and Gray (1961) documented earlier published papers on the food of the genus *Astropecten*. They stated their belief that the various *Astropecten* species are non-selective feeders in sand bottom and thus when mollusks are present in an area, the mollusks will be fed upon. Gray, Downey and Cerame-Vivas (1968) have described the various Astropecten species occurring in the vicinity of North Carolina. The common *A. articulatus* is described as a blue or purple color and outlined by bright orange.

Hyman (1955, p. 369) states that species of *Luidia* feed mainly on other echinoderms. The only mollusk found in gut samples of the common *Luidia clathrata* (Say) from off North Carolina - the long-armed light brown sea-star found commonly between New Jersey and Brazil (Gray, etc., 1968) - by Wolfe in Porter and Wolfe (in press was an occasional *Abra lioica* (Dall). I found no mollusks in stomachs of the few *Goniaster americanus* Verrill collected off our coast.

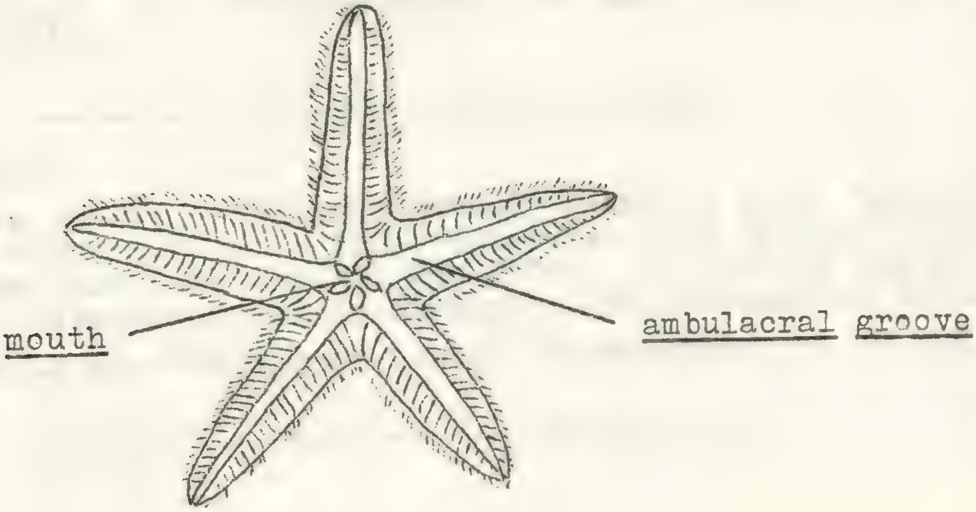
Several methods are used in processing gut contents of *Astropecten*. Sea-stars are preserved in a 10% solution of formalin or frozen until they can be worked on. A sharp-pointed dissecting forceps with curved points should be used to remove the outer under (oral) surface of the sea-star. Starting at the mouth, the plates of the ambulacral groove

(note diagram) are ripped off for at least a third of the arm length. Care should be taken not to disturb the digestive area and thus break any delicate shells. Shells can be removed from the digestive area by carefully teasing apart the tissue and searching through it. Frequently it is easier to gently remove the whole digestive mass from the sea-star using the curved forceps and spreading the mass out on a larger flat surface. A magnifying lens or a binocular dissecting scope greatly facilitates finding the very small shells. Shells frequently need to be washed in order to free them from the sticky digestive tissues. If a person is not concerned about collecting shells with the animal still intact, a quicker and a little more thorough method, is to gently remove the digestive material to a small petri dish or saucer, add full strength clorox and swirl the whole mixture gently for several minutes until the digestive tissues are well broken up. If left in too long, valves of bivalves will separate from each other. The resultant mixture is poured into a beaker or jar and diluted with fresh water to stop the action of the clorox. This is then washed into a funnel lined with coarse filter paper or a fine textured cloth and the material again rinsed thoroughly with fresh water. The filter paper or cloth after draining is removed from the funnel and spread out to dry. The result will be an interesting group of cleaned shells - again magnification is needed to see many of them. The forceps I use for sorting (made from old hacksaw blades and given to me by Dan Steger) have a very light touch and enable me to pick up delicate shells.

Obviously most collectors cannot afford to charter a fishing boat for the purpose of sea-star collecting. In our more southern waters, scuba diving is an excellent means of securing sea-stars, particularly those from known habitats. The best and most accessible source to most collectors are the commercial fish houses or trawlers where unsorted loads of fish or calico scallops can be found.

A review of data on size and gut contents for each of over 200 sea-star specimens show that the larger sea-stars contain more mollusks and a greater number of species than smaller sea-stars in their digestive tracts.

Oral or under side of Astropecten



Dominant mollusks in small A. articulatus were also dominant in larger specimens. Thus it seems that biased sampling of only larger sea-stars is justifiable. Our data further shows that a noticeable variation in species present occurs between sea-star samples from different areas. A sampling program just started may show seasonal differences.

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Wells, H. W., Mary Jane Wells, and I. E. Gray. 1961. Food of the sea-star Astropecten articulatus. Biol. Bull. 120: 265-271.

NOTES AND NEWS:

Grace McDougall and Jerry Steele are moving to Florida. Their address eventually will be: Plum Street, Inverness Highlands West, Inverness, Florida 32650.

Mrs. McDougall served several consecutive terms as our corresponding secretary, and for six years the machinery to put out these NOTES was housed in the basement of her home in New Hyde Park. Both she and Mrs. Steele have worked uncountable hours for the club and we wish to express our appreciation, not only for their labors but also for their hospitality, interest, and companionship. Our best wishes go with them to their new situation.

COLLECTION FOR SALE.

Extra fine quality shells, representing many years of work; includes worldwide Conus, Voluta, Mitra, Oliva, bivalves, land shells, common, semirare, and some rare. No lists. Sacrifice. Collection can be seen on Wednesday afternoons and on Sundays. For information write,

Nick Katsaras, 478-B So. Washington Avenue, Bergenfield, N. J. 07621

ON THE PRESENCE OF LARGE NUMBERS OF THE SPECKLED GARDEN SNAIL, *HELIX ASPERSA* IN HAITI

Florentin Maurrasse

Nowadays, growing improvement of communication between continents has long overcome natural barriers. So far as the dispersal of species is concerned, it may happen that introduced species are so well adapted to their new environment, that they become the most familiar figures in the landscape. In recent years, however, people have become increasingly concerned not only with human abuse of nature, but also with the long term effect of introduced species on the local ecosystem. This concern is enhanced by the fact that the newcomers may have a damaging effect not only on the environment but on man as well.

Although insects have been the most feared, mollusks may also show harmful effects, as for example the recent introduction of *Achatina fulica* in Florida. Many countries still do not care much about, or are simply unaware of the magnitude of ecological imbalance that can be triggered by introduced species, and they have no customs control to prevent such introductions.

More often, when people think of population explosions of introduced species, they visualize the rabbits in Australia. But since my recent travels, I tend to think rather of the Speckled Garden Snail, *Helix aspersa* Müller, 1774. The reason? In November 1971 I took a trip to Haiti in the Caribbean, and found that the humid highlands southeast of Port-au-Prince were literally covered with this species. Seven years ago, when I used to go hiking in this area, there were only a few specimens, mostly in ornamental gardens. In Europe, their original home, when I went collecting in Provence in southern France, I always found very few scattered individuals. In the Highlands around Kenscoff in Haiti, *Helix aspersa* shells were as abundant as bits of weathered limstone covered with a deep reddish tropical soil. Unlike their French counterparts, these individuals were on the whole smaller, and more highly spired, and the shell color had a rusty background due to the soil on which they live. Except for these slight peculiarities they were all typical. The banding pattern was also similar to the French. Their spread in vegetable gardens has not only reached the stage of a population explosion but a real plague, as the peasants complain. Their attempts to eradicate the snails by hand picking remained fruitless. *Helix aspersa* has virtually established its complete ascendency over the area, and this is a permanent characteristic in the region, not just a seasonal one. These mountainous areas above 1500 meters stay fairly cool all year round, below 30 degrees Centigrade even during the warmest summer months, and because of their geographical setting, they receive most of the humid air formed by evaporation over Enriquillo Lake and Etang Saumatre. Fog is nearly always present from early afternoon until the next morning. Thus, taking advantage of favorable natural conditions plus the fact that there is practically no natural enemy, this species is driving out even such common indigenous species as the Chondropomids. The largest

Haitian species found nearby was Cepolis cepa Müller, 1774 var. chocolata Pilsbry, 1933, but in negligible quantities when compared to Helix aspersa. The indigenous species easily pass unperceived by the casual collector, whereas the abundance of H. aspersa is rather striking at a glance, even to the inexperienced observer.

Predators, if there are any, would have no difficulty in catching these snails, even though the reddish color of the shells makes them somewhat inconspicuous in their surroundings. The only oleacinid, a family of rapacious snails, found nearby is a rather small form, probably Oleacina pethionis Weinland, 1880. Even a much larger species, Oleacina peasei Pilsbry, 1933, which I collected in the high mountains of the southern peninsula, did not show any gastronomical interest in specimens of H. aspersa which I was trying to feed it. On the contrary it was the Helix aspersa who voraciously scraped away at the delicate apertural edge of the Oleacina peasei. The other small oleacinids found in the same region where this huge population of H. aspersa is thriving, can hardly impede such a massive invasion. Perhaps even their own existence is endangered as the competition for the niche becomes sharper.

Unfortunately, there is no special program to eradicate the Speckled Garden Snail, and the local people, unlike the French, find them little or not at all attractive as an article of food. Perhaps, after reading these lines, some French gourmets might wish they had a gragantuan appetite in order to enjoy these escargots at home daily instead of having to pay for expensive ones served in some hotel.

THE EROTIC OCEAN
A Handbook for Beachcomers

by Jack Rudloe. The World Publishing Company (Times Mirror), New York, 1971. 448 pp. including bibliography and index; 24 black and white photographs, about 45 wash drawings. Price: $15.00

Jack Rudloe is president of the Gulf Specimen Company, Panacea, Fla., which supplies schools, research institutions, and public aquariums with specimens of marine life taken from the Gulf of Mexico and the Caribbean. He has taken part in scientific collecting and survey programs in the Indo-Pacific and Atlantic. His title refers to the reproduction of life in the waters.

An experienced field worker, Mr. Rudloe takes the reader to various ecological stations -- marsh, mud flat, mangrove, coral, rocky and sandy areas -- describing the signs, tracks and habitats of the marine life he finds and his methods of collecting. Although only one chapter (33 pages) is devoted entirely to the Phylum Mollusca, molluscan species are described and commented on throughout the book as they occur in the habitat being discussed. There is a wealth of detailed information for the field collector who is interested in a general understanding of the various forms of life that share the habitat of the mollusk. Both scientific and popular names are used.

Facilities of the Gulf Specimen Company include marine aquaria and there is a chapter on "Setting up a Salt-Water Aquarium" that includes instructions on materials, control of salinity, PH factor, filters, feeding etc. Observations of captive specimens and their transfer to the aquarium are informative.

The author gives his narcotizing and preserving formulas and methods, and tells how to pack alcohol and dried specimens for mailing.

Mr. Rudloe's eagerness to share his love of the sea and its creatures, and his concern for their preservation, are evident throughout the book. His reports of desecration and destruction of habitats by industry and developers will and should shock many readers into joining the fight for protection of the environment.

There are some typographical errors, inevitable considering the mounds of detail, and generally unimportant in relation to the amount of information presented. It is interesting to note, however, that Mr. Rudloe has found Atrina rigida, the pen shell, living only among the roots of sea grasses. This may be a tip as to where to find this species near Panacea, but notes in the literature and the reviewer's experiences are that A. rigida also lives in clean sand and sandy/silty areas.

Dorothy Raeihle

ARTICLES OF INTEREST:

In AUDUBON magazine, Vol. 74, No. 1, January 1972: "Lignumvitae -- the Last Key" (Florida), impressions by Peter Matthiessen, color photos by Patricia Caulfied. "The Message of the Reef" (Palau) by C. Lavett Smith of the AMNH and photographer Douglas Faulkner followed by "A Window on the Reef", a portfolio in color by Douglas Faulkner. "Man and the Great Reef" (Australia), an essay by Edward Abbey with color photos by Douglas Faulkner.

From article in Motel/Motor Inn Journal, July 1971: entitled "Let's talk about linen abuse by guests." "Our 38 units consist of over 60 rooms and to date we have found that renting our linens has been the most economical for our particular operation. Since we are a beach resort, we also have losses occur when the guests wrap "their shelling treasures" to protect them from breakage."

QUESTION. How would you describe a bull-session of shell collectors when they run out of any more topics to discuss?

ANSWER. For want of a snail the prattle was lost.

-- Invented by Mr. Henry I. Christ who is no shell collector himself but who obviously knows a lot about them.

NYSC NOTES NUMBER 181 APRIL 1972

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FOUNDED JAN. 1949

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NEW YORK SHELL CLUB NOTES No. 181 April 1972 Page 1

The NEW YORK SHELL CLUB meets on the second Sunday of each month, September through June, in

THE AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: Sunday, MAY 14, 1972, at 2:00 P.M. in ROOM 319

PROGRAM: A SALUTE TO THE SCALLOPS (PECTINIDAE)

A spectacular presentation of this attractive family, with slides and specimens from the American Museum of Natural History's collection, supplemented by slides and specimens provided by members George Raeihle, Dorothy Germer, and Myra Chaplin.

Members are encouraged to bring in favorite or "special" examples of this group from their collections.

There will also be a discussion of our summer field trip, and the nomination committee will be chosen for June's important election of new officers.

All members should give some thought to these nominations for the future leadership of the Club, before the elections. It is an extremely important part of your contribution to the Club and to the continued enjoyment and benefit of all members.

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Review -- A Guide to Shell Collecting in the Kwajalein Atoll W. E. Old, Jr. p.4
A Foiled Predator M. K. Jacobson p.5
The Field Museum of Nat'l. History in Chicago Dr. Alan Solem p.6,7

The Western Society of Malacologists will hold its fifth annual meeting at the University of Redlands, Redlands, California from June 18 - 21, 1972. The hosts will be the Yucaipa Shell Club. Dues for membership are $2.50. The President of the Society is Beatrice L. Burch, 2368 Kuuhoa Place, Kailua, Hawaii 96734.

ON RARE SHELLS

William E. Old, Jr.

Not long after I came to the museum, a well-known Florida collector wrote, "How I envy you being there at the museum and everyone coming in with their rare shells." I replied that this sounded like wishful thinking. In the past decade rarities, or so-called rare shells, have materialized at the rate of about one per year. In every case, the shell was brought or sent directly from the country of origin. That old shell from the attic or grandma's whatnot stand has proved to be just that - merely an old shell, and of no particular value. To the novice, literally any cylindrically shaped gastropod shell is a "Glory-of-the-Sea Cone," and any cowrie shell is invariably envisioned as being a long-lost specimen of *Cypraea leucodon.* As I recall, the first person to actually bring in a genuinely rare specimen, was a collector who had just purchased a *Cypraea langfordi*, and wanted to show it to me.

An associate, Anthony D'Attilio, once obtained a specimen of *Cymatium ranzanii*, a species that had been described in 1851 and was unobtainable for years. Tony's specimen had been collected in Mozambique. Later, in breaking up an old display of shells, a shell from an old collection and labeled as *Cymatium femorale*, turned out to be a specimen of *Cymatium ranzanii*. A second, similar case was that of a collector who had shown me a dextral (right-handed) specimen of *Busycon contrarium* that he had collected in the Ft. Myers Beach area. In removing a dusty shell labeled *Busycon carica* from another display, I felt that it was actually another dextral specimen of *Busycon contrarium*. Here were two "sleepers" found on the premises.

Two guesses that proved to be correct were a small parcel received from a contact in Zanzibar. I mused that perhaps it would contain a specimen of *Cymatium ranzanii*. Then opened the parcel to find that the guess was correct. A second guess was the receipt of a small registered parcel from a friend in Florida. *Cypraea surinamensis* was my thought since the sender owned one. Bingo! He had sent the shell as a gift to the museum.

A small air mail packet from the Solomon Islands yielded two specimens of *Conus glorimaris*. Other parcels from the same source produced a total of five *Conus glorimaris*, one *Cypraea aurantium* and a *Casamaria vibex*. The Islander hasn't been heard from since, evidently having "retired" on the income from the seven shells.

An American lady stopped at the Museum on returning from the Republic of Somalia. "I think that I have a specimen of *Strombus oldi* in my knapsack," she said. She had surmised correctly, and later presented the shell to the museum. Collectors sometimes inquire where they can obtain a specimen of my "namesake." Actually there is no source of supply. The few known specimens of this species in the country have been brought or sent back by Americans residing in the Republic of Somalia.

A few years ago, an American who had collected off Jiddah, Saudi Arabia, brought in an assortment of shells. His *Cypraea talpa* proved to be a 77mm. specimen of *Cypraea exusta*, a rather rare species endemic to the Red Sea. (Later he returned to ask, "are you sure that isn't *Cypraea talpa*?"). Incidentally, one shell wasteland is the Persian Gulf, long ballyhooed as a home of rare shells. Records in the literature, lists of collections from expeditions, and reports of people who have lived and collected there, have produced very little in the way of shells and no "rarities." The Gulf water is hot, fairly shallow, and with a high inflow of silt and freshwater from the Tigris and Euphrates Rivers. A medical missionary who spent a residence at a hospital in Bahrain, considered it a sheller's dilemma. Collectors residing there have stopped in with common shells, such as *Cypraea caurica* and *Conus pennaceus*, and stated that "Two of these have been found by our group in three years."

Photographs of two shells from the Philippines proved to be of a *Cypraea leucodon*, a legendary species, known only from Broderip's type in the British Museum, and a second specimen at Harvard University. The precise locality for the species had been unknown, "South Africa" having been a much repeated error. This specimen was later purchased by John duPont. The second cowrie in the photographs, an unnamed species *ex pisc*, was obtained by Crawford Cate, described as *Cypraea porteri* (after the collector) and deposited in the California Academy of Sciences.

Another *Cypraea*, received in an assortment of shells from Muscat, Arabia, proved to be exciting. It was a specimen of *Cypraea teulerei*, an Indian Ocean species, somewhat similar to *Cypraea mus* from the Lower Caribbean area. The one received was, to my knowledge, the first to be collected in the 20th Century and with reliable locality data. All old, existing specimens in collections were usually labeled as having come from "Mocha, Yemen" in the Red Sea. Later I was told to keep the shell, as others had been found. Since then, the supply of *Cypraea teulerei* has caught up with the demand.

This is also the case with *Tibia martinii* and *Strombus listeri*. Many of the deep water Gulf of Mexico shells that were formerly collector's items are now common-place. *Aurinia kieneri* is a good example. So rare shells come and rarity goes, or *Sic transit gloria maris*.

Illustrations and Further Reading:

Cate, Crawford. A new cowrie species from the Southern Philippines. *Veliger*, Jan. 1966, pp. 200-201, pl. 29.

Emerson, William K. *Strombus* (*Tricornis*) *oldi*. *Indo-Pacific Mollusca*, Apr. 30, 1965, pp. 397-398.

Emerson, W. K. and Anthony D'Attilio. Remarks on *Triton ranzanii*. *American Museum Novitates*, Oct. 10, 1962, pp. 1-8.

Emerson, W. K. and W. Old, Jr. New Records for *Cypraea surinamensis*. Nautilus, July 1965, pp. 26-30, pl. 3.

(Reprinted from The Shell Case, Naples Shell Club, Naples, Fla. Feb. 1972.)

A Guide to Shell Collecting in the Kwajalein Atoll by F. B. Brost and R. D. Coale, paperback, 157 pp. Chas. E. Tuttle, Rutland, Vt. $4.95.

Shell collectors interested in shells of the Indo-Pacific Province -- which would be the majority of us -- never seem to have enough reference books on this vast area. The present book will prove useful, as it deals with shells of the Kwajalein Atoll, in the Marshall Islands. Since the Second World War, numerous Americans have been stationed in the Marshalls and neighboring island groups. This book will prove very useful in identifying many of the shells to be collected in Micronesia, as well as in other areas of the tropical Pacific.

The book is of handy size, measuring 8-1/4" x 7-1/8". Printed on heavy stock, it was evidently intended to be taken along in the field. Each of the 200 species covered are illustrated on 30 half-tone plates, however a few of the illustrated shells are either too small or dark to be recognizable. One slight drawback that was noted, there are no captions on the plates or facing pages. An index to the photographs is given at the back of the book.

All authors' names are placed in parentheses, including well-known Linnean names that are still in their original combinations. A few author names were unknown to the writers, for example Hedley is the author of *Natica stellata*, and Montfort authored *Magilus antiquus*. Also, a few errors of commission and omission were noted. Among them, *Cypraea maculifera* Schilder is mislabeled as "Cypraea histrio Gmelin" (an Indian Ocean species); *Lambis scorpio* is attributed to Linnaeus but the original spelling of the specific name was *scorpius* (The spelling *scorpio* dates from Lamarck, 1822). *Quimalea pomum* Linne is called *Tonna pomum*, a different genus. *Hippopus hippopus* Linnaeus, is listed as *Hippopus maculatus*, a later name. *Pteria* is consistently mispelled "Pteri." A few species are incorrectly attributed to non-binomial authors, namely Martyn and Chemnitz.

Common names are given for approximately half of the species covered by the book. For example such obvious ones as *Terebra felina*, *Conus tessulatus*, and *Cypraea goodalli*, the text states "No common name." Or as stated in the introduction, "Because common names are variable, one must use the scientific name when describing a species to a collector in another area. The common names used at Kwajalein have been included in this book along with the scientific names, many species, however have no local common name."

William E. Old, Jr.

DR. GRACE BEAVEN

We are saddened to report the death last month of our member Dr. Grace Beaven, of Ridgewood, New Jersey. "Billie" joined the New York Shell Club in 1960, made many friends and was a steady and interested member although in recent seasons was unable to attend regularly.

Our deepest sympathy is with her husband, Dr. J. Mahlon Beaven.

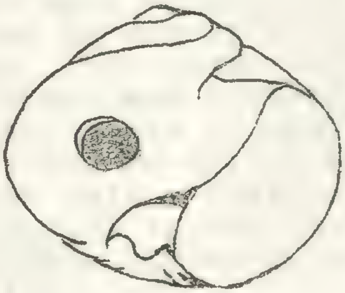
A FOILED PREDATOR

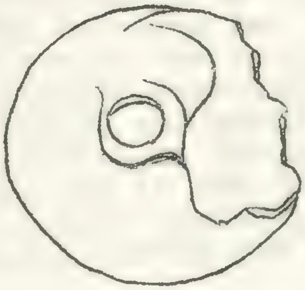
Morris K. Jacobson

It must be well known that the predaceous moon snails (genus *Polinices*) drill neat, countersunk holes in clamshells to get to the clam meat within (see NOTES 111:5, 140:6, 142:5, and Jacobson and Emerson SHELLS OF THE NEW YORK AREA, p.46). Similar holes are also found in the shells of many *Polinices* themselves, indicating that this predator is not above dining cannibalistically on his own kin. The holes in *Polinices* shells are usually found somewhere on the large body whorl where the shell is relatively thin and the hidden meat thus more or less easily accessible.

Recently, I found in Rockaway Beach a rather beaten up specimen of a small *Polinices duplicata* Say, about 1-1/4" high and 1-3/16" wide. (This is the moon snail species which has the umbilicus hidden by a strong, usually purplish callus. The moon snail with the open umbilicus is *P. heros* Say.) Its lip was badly fractured and the inside of the shell showed marks of having been inhabited by a small lady's slipper shell (*Crepidula plana* Say) and a hermit crab. Thus the snail probably had long ago lost its life.

The shell also bore an incompletely drilled hole about 3/16" in diameter, showing that it had been unsuccessfully attacked some time in its short life by a predatory neighbor. What was amazing about this hole was that it was not located anywhere near a spot where a breakthrough was possible. Instead it was placed plunk in the middle of the umbilical callus, the heaviest, strongest, and thickest spot in the whole shell. Just what it was that induced the attacker to attempt entry at this point, is a mystery. A hole in such a fantastically unsuitable place is most unusual -- most *Polinices*, as has been indicated, use a more "sensible" spot. If this unusual case shows anything, it shows that *Polinices* drills at any spot in the food snail and does not seek, as the hunting wasps do, a vital spot in its victim.





On Monday, April 3, 1972 the Israel Malacological Society opened a Malacological Museum in Nahariya, Israel. Exhibited are molluscan shells from Israel and abroad as well as art objects formed from shells.

THE FIELD MUSEUM OF NATURAL HISTORY IN CHICAGO

Dr. Alan Solem, curator of mollusks, writes as follows about the reconstruction the mollusk department has undergone:

The two biggest time-consumers have been in connection with work. About two and one-half years ago it became obvious that Lower Invertebrates was going to be moved from its "temporary quarters" as established in 1938 to somewhere else in the building. Our former area was needed to provide adequate working quarters for an expanded Department of Exhibition. Several months were taken up with planning quarters for this area or that area and twice these tentative steps reached the point of architectural drawings. Twice the decision was made to look elsewhere. Finally plans were made to fill in half of a light-well in the West side of the building, providing 7,600 square feet of space on two levels. Weeks of scribbling on paper, counting trays, laying out offices and sundry activities resulted in a plan that was accepted. All this was occuring the end of 1969 and early 1970. At long last, in the Summer of 1970, final plans were put out for bids and that Fall construction started. Proceeding without delays or problems (unbelievable to anybody who has lived through a construction job!) the area was completed early last April. For months every segment of the move had been planned and three months were devoted to nothing but clearing up minor curatorial problems and sorting old papers into "keep" and discard piles. The need for this was that construction of my new area was part of a package deal. Construct my new area, clear me out as rapidly as possible, then tear down what had occupied my area and start new work for the Exhibition Labs. So I had three weeks to move all specimens, cabinets, books, equipment and furniture.

We are now cataloguing in the 170,000's and the collection is housed in 2,600 wooden trays, each 26" x 32". Some "swing room" new cases were provided, but still we had to shuffle in and out. Two broken vials and one smashed unionid later, all trays were shifted and in proper order. We have room to process the 40,000 uncatalogued sets and space for growth to about 350,000 sets of specimens. In addition, alcohol collection storage space have quadrupled and material from collecting since 1959 can be stored in proper order. The new area has two levels, each 3,800 square feet. The lower level serves as the collection magazine, with offices, library and specimen processing room on the upper. Dr. Helen McCammon, a new research associate who works on feeding in brachiopods, also has an office and we have room for addition of student and more volunteer help. Physically, we are in the best condition of any mollusk collection in the country, except possibly the new Delaware Museum, with adequate space for collection growth and efficient processing of materials.

The second major project started eighteen months ago, with a group of staff members being asked to prepare an overall plan for redoing the exhibition halls at Field Museum. When our building was opened in 1921, an initial surge of effort resulted in the halls being filled by the mid-1940's. While some renovation has been done since then and a very few new halls done, there has not been an overall review and no plans for future development prepared. As you can imagine, the problems of

how to organize 12 acres of exhibit areas, what themes to use, what balance of subjects to propose, how to group these, where to locate sets of exhibits within the building, and writing up tentative decisions have taken enormous amounts of time. For most of this year, three of us have met every noon to discuss the problems, and hundreds of evening and weekend hours that normally would have been devoted to research went into outlining possible exhibits. This work still continues, but at a decelerated pace (fortunately).

In the last three years I've become increasingly involved with a new tool, the scanning electron microscope. This represents the first major advance in seeing since the optical microscope was invented in the early 1600's. I can understand how Hooke and Leeuwenhoek must have felt looking at a new world. In cooperation with the American Dental Association I have been studying patterns of structure and variations in land snail radulae. They have a scanning microscope and access to this has been possible, so long as I work on teeth or feeding mechanisms! The results have been exciting, and the Veliger now has a series of several papers announcing some of the finds. Very soon this instrument will become just as essential as the optical microscope for studying small objects and I now have a grant proposal in to the National Science Foundation for money to establish a scanning electron microscope facility at Field Museum. As a by-product of this, Field Museum is planning a temporary exhibit on the uses of the scanning microscope, and I have the task of making the illustrations for this. This should be a spectacular show, but again, the time will come from my research activities.

"A historical retrospect of the oyster-business in New York City affords many interesting facts. In 1621 it was recorded in a letter to the old country that 'very large oifsters' were so abundant at New Amsterdam, that they could not be sold. 'Oysters are very plenty in many places' asserted the traveler Von der Donk, in 1641 ... The inference is that every man could easily gather for himself all he wanted ... The digging of (oyster) shells was for the purpose of making of lime and also for the purpose of paving the streets, and in the course of dredging for them great quantities of living oysters were wasted. Pearl Street received its name because it was paved with oyster-shells... Just how far up the Hudson River ... oysters extended is hard to determine ... Captain Metzger mentioned Rockland lake as the Northern limit. The distance from here to Sandy Hook is no less than 50 miles, and all the way it was an almost continuous oyster-bottom. Bedloe's island (now the Statue of Liberty) in the harbor, was first known as Big Oyster island, and some rocks and tide-bars south of it as Little Oyster island. In the neighborhood of Staten Island the circumstances were especially favorable, and there were numerous beds ..." (AH, PROGRESS!)

(Gleaned from Ingersoll's "The Oyster Industry", Washington, D. C. - 1881)

Mart Hulswit

[illegible]

[illegible]

[illegible]

THE AMERICAN MALACOLOGICAL UNION, INC., Mrs. Marian S. Hubbard,
Recording Secretary, 3957 Marlow Court, Seaford, N. Y. 11783

MBER SHELL CLUBS IN THE UNITED STATES (August, 1971)

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RAZASPORT MUSEUM OF NATURAL SCIENCE, Box 355, Lake Jackson, Texas 77566

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Corresponding Secretary, Dorothy Schafer, 3709 Polk St., Hollywood 33021

HICAGO SHELL CLUB, Dept. Zoology, Field Museum of Natural History, Chicago,
Ill. 60605. Corresponding Secretary, Walter F. Mitchell.

OASTAL BEND GEM & MINERAL CLUB, c/o Mrs. Pat Ratliff, P.O. Dr. 1232,
Bay City, Texas 77414.

COASTAL BEND SHELL CLUB, c/o Corpus Christi Museum, 1212 N. Water Street,
Corpus Christi, Texas 78401. Secy., Miss Yvonne M. Canine,
525 Dickens, Corpus Christi, Texas 78412

CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA, Los Angeles County Museum,
Los Angeles, Cal. 90007

CONCHOLOGICAL SECTION, BUFFALO SOCIETY OF NATURAL SCIENCES, Buffalo Museum
of Science, Humboldt Parkway, Buffalo, N. Y. 14211. Secy., Alice Gary.

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726-2888. Adults meet at members' homes.)

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Hawaii 96815

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624 Waterfall Isle, Alameda, Cal. 94501

PACIFIC NORTHWEST SHELL CLUB, INC., Rt. 1, 2405 N.E. 279th Street,
Ann Smiley, Corresponding Secretary, Box 185.

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Thanks for sending the Notes

SHELL CLUBS IN THE UNITED STATES (August, 1971) SHEET 2

PITTSBURGH SHELL CLUB, Section of Invertebrates, Carnegie Museum, 4400 Forbes Ave., Pittsburgh, Pa. 15213. Phone Dr. J.J. Parodiz, 621-7300.

ROCHESTER SHELL AND SHORE CLUB, c/o John Crucini, Librarian, 65 Eastland Road, Rochester, N.Y. 14616. Secretary, David Pospula, 217 Dunn St., Rochester, N. Y. 14621

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SAN ANTONIO SHELL CLUB, 9402 Nona Kay Drive, San Antonio, Texas 78217 Secretary, Mrs. Mary Inman

SAN DIEGO SHELL CLUB, San Diego Museum of Natural History, San Diego, Cal. 92112. Contact Mrs. Nola Michel, 4758 Mt. Cervin Drive, San Diego

SANIBEL-CAPTIVA SHELL CLUB, c/o Harvey Meyer, Box 61, Captiva, Fla. 33957

SANTA BARBARA MALACOLOGICAL SOCIETY, 2559 Puesta del Sol Road, Santa Barbara, Cal. 93105.

SARASOTA SHELL CLUB, 6512 Clemson Street, Bradenton, Fla. 33505

SOUTH FLORIDA SHELL CLUB, Museum of Science & Natural History, 3280 So. Miami Ave., Miami, Florida 33129

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SOUTHWEST FLORIDA CONCHOLOGIST SOCIETY, P.O. Box 876, Ft. Myers, Fla. 33902

TIDEWATER SHELL AND FOSSIL CLUB, Norfolk Museum of Arts and Sciences, Norfolk, Va. 23510

THE WESTERN SOCIETY OF MALACOLOGISTS (an organization of affiliated Western clubs which holds a convention on the West Coast, usually in June.) c/o Dr. James H. McLean, Los Angeles County Museum, Exposition Park, Los Angeles, Cal. 90007. Secretary, Mrs. Mary D'Aiuto, ~~804 Fielding Drive,~~ 1551 El Camino Real, Palo Alto, Cal. 94303

YUCAIPA SHELL CLUB, Mousley Museum of Natural History, Yucaipa, Cal. 92399. Rec.Sec., Mrs. ~~Ruth A. Newby, 35480 Yucaipa Blvd., Yucaipa, Cal. 92399~~ Eileen G. Ring, 1510 No. Euclid Ave., Upland, Cal. 91786

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CROWN POINT SHELL COLLECTORS STUDY GROUP, c/o Mrs. James E. Hedges, 404 North East Street, Crown Point, Indiana 46307

Greater Tampa Shell Club

Guam Shell Club, Box 2954, Agana, Guam, Marianas Is. 96910

Okinawa Shell Club

Oregon Society of Conchologists, 2217 S.E. Madison Ave., Portland, Oregon

Pacific Shell Club, c/o Los Angeles County Museum

Philadelphia Shell Club, Dept. Mollusks, Academy of Nat. Sci., Philadelphia

Saipan Shell Club, P. O. Box 76, Capitol Hill, Saipan, Mariana Islands 96950

"Cleveland" Shell Club, c/o Robert W. Morrison, 1765 Radnor Road
Cleveland Heights, Ohio 44118

ADD: Naples Shell Club, P.O. Box 1991, Naples, Florida 33940

PACIFIC NORTHWEST is in Ridgefield, Wash. 98642

Fort Myers Shell Club now at 1936 Coronado Road

NYSC NOTES NUMBER 182 MAY 1972

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The NEW YORK SHELL CLUB meets on the second Sunday of each month, September through June, in

THE AMERICAN MUSEUM OF NATURAL HISTORY

ANNUAL FIELD TRIP -- Saturday, June 10, 1972, 12:00 PM -- *

NEXT MEETING: Sunday, JUNE 11, 1972, at 2:00 PM in ROOM 319

PROGRAM: COLLECTING AT ST. JOHN'S (with underwater slides) by Leo Hernandez

SLIDES OF LIVE AUSTRALIAN MOLLUSKS by Mart Hulswit

REVIEW OF THE FIELD TRIP (held the previous day. Bring your best finds and observations!)

SHELL-OF-THE-MONTH .... Plagopecten magellanicus

ANNUAL ELECTIONS OF OFFICERS **

*At Orient Beach State Park, on the northeastern tip of Long Island. A low tide of -0.1 at 3:36 PM. There is but one parking lot and one picnic grove. You'll have no trouble locating the group, especially if you arrive for a noon lunch hour! Or even earlier!

Bring your lunch and thermos (although there is also a snack bar), sneakers for walking or wading on the pebbly beaches (the last ice age's terminal moraine is hard on bare feet), mask and snorkel for observing mollusks in their natural habitat, and containers for worthwhile specimens. Plastic pails of light color are good for observing live animals. Mostly, bring your interest!

DIRECTIONS: Long Island Expressway to Riverhead. New York State Route 25 north and east to Orient Beach State Park. (The Ferry Landing is a half mile too far!)

If you offer a ride or need a ride, please call the following members in the following order -- Veronica Johns, LE 2-8690, Milton Werner, AP 7-2076, Leo Hernandez, 569-3701, and Margaret Borsdorff, Great Neck, Long Island 516-HU 7-4517.

**Please send your nominations to Nominations Committee member Milton Werner, 70 Richmond Street, Brooklyn, New York 11208, or call him at AP 7-2076.

MINUTES

The first speaker at the March 12th meeting was member Myra Chaplin, who proceeded to prove that there is more than one Chaplin who knows how to employ an inventive wit. Adding enough humor to make a fine presentation especially memorable, Myra described a one-month Lindblad tour of islands off Africa's east coast. The itinerary included the Seychelles and, she hoped poetically, many seashells. But her collecting was curtailed by restrictions, at many stops, against shelling on the local reefs. In one case, even beach-combing was forbidden. She filled these gaps as best she could by buying shells from local boys.

As a naturalist (at the Bergen County Wildlife Center, Wykoff, N. J.), Myra saw more than most travelers do, and she shared her insights with us. Her fine photographs included scenery, animals and people, as well as shells. A picture of the ship's swimming pool cried out for explanation, so she explained it: it measures 4-1/2 by 6 feet around by 8 feet deep, making it possible for one to "drown in it while holding on to both sides" -- and its function is to allow practice with scuba gear.

The Shell-of-the-Month was provided by Cherita Stark. The subject was three specimens of Colus which Cherita had found within 100 yards on a beach at Ditch Plains, Long Island. There are no monographs on this seldom-seen genus, and little is known about it. Undaunted, investigators have named a number of species, of which only a few are generally considered valid. One book lists 46.

The Club's annual social meeting was held on April 9th. As in the past, we were the guests of Dorothy Jensen, using her Broadway Dance Studio in Astoria, Queens as our meeting place. The program consisted of a shell auction, the sale of fixed-price shells, a raffle, a film, a cocktail hour, and a buffet supper.

In thanking those who had donated shells and related items for auction and sale, President Mart Hulswit noted that the amount was "incredible" and the quality fine. Auctioneer Bill Old had so much material to handle that he frequently assembled lots of two or more shells as he went along. Bidding was enthusiastic, and the proceeds were $600.00. Among the noteworthy "related items" were a letter from Dr. Henry Pilsbry to Karl Jacobson, donated by the recipient; copies of issues of National Geographic that have become shell-collector's items; a copy of Gary Magnotte's new book on Florida shells, autographed by the author, who had come from Florida for the auction; and two magnificent pen drawings of Murex by member Leo Hernandez.

At the sale-table, handled by Harold Feinberg, quantity and quality were such as to bring in $100.00. The raffle, offering a most alluring prize -- the beautiful volume, "Australian Shells," by Willson & Gillett, donated by Veronica Johns -- sold tickets in flurries.

The film was the fascinating "The Intertidal Life of the North American Pacific Coast - Part III, Mollusks." An official Canadian Government film, it is a beautiful record of a variety of mollusks moving about in natural surroundings. Among its dramatic moments are sequences in which Pecten and Cardium escape from starfish, using their differing forms of acrobatics.

As always, the cocktails and punch, and later the buffet, were much appreciated, both for themselves, and for the opportunities they offered for busy socializing. With 93 members and guests present, it was a grand opportunity indeed, and a satisfying climax to a fine afternoon.

Milton Werner

SHELLS ARE WHERE YOU FIND THEM

From Jerome M. Bijur's recollections of the AMU convention in Cocoa Beach, published in THE SHELL CASE, Naples Shell Club, vol. 2, No. 1 (1972) p. 22:

After lunch, came talks almost entirely devoted to land and freshwater mollusks. As these did not particularly interest me, I joined a small group who had decided to do a bit of East Coast shelling. Actually, this led to one of the highlights of the whole meeting. Let me tell you about it.

Driving down to Sebastian Inlet, we waded around in the shallow bay. Not too much exciting although we did find very large Nassa Snails, Nassarius albus Pulteney; Razor Clams, Ensis minor Dall; Atlantic Oyster Drills, Urosalpinx cinerea Say; Huge Shark Eyes, Polinices duplicatus Say; Atlantic Augers, Terebra dislocata Say; and others of the usual inlet waters variety. Returning to Cocoa Beach, we visited a wholesale fish-house that processed Scallops. Right nearby, we discovered huge piles of Calico Scallops, Argopecten gibbus Linne, that had been through the shucking process and which had been dumped in a neighboring field. Looking through these mounds, we were perfectly delighted to find a wide variety of desirable species. Most prolific were Ravenel's Scallop, Pecten raveneli Dall -- deep purple beauties; the Knobbed Whelk, Busycon carica Gmelin; the Giant Eastern Murex, Muricanthus fulvescens Sowerby; small species of diverse sorts such as Trivia, Turrids and Venerids; AND, believe it or not, whole Lion's Paws, Lyropecten nodosus Linne, regular size and miniature. This whole discovery was quite thrilling and only went to prove the age-old adage, SHELLS ARE WHERE YOU FIND THEM. But we were a bit dismayed when we saw a big truck pull up, load the shells aboard and drive off to dump them in the ocean as ordered by the local Board of Health. These piles are quite malodorous, and fly and maggot ridden. However, we did get some fine specimens for our trouble and that was that.

EDITOR'S NOTE: We are planning to introduce a column in the next number of these NOTES which we plan to call AN UNFORGETTABLE COLLECTING EXPERIENCE. Mr. Bijur's account above might very well serve as a model

for the short items we hope to be able to run. Among other things, this should encourage some more of our members to send in contributions to this periodical, for surely everyone of us must have had some outstanding experience while out collecting shells, in the field, at a fellow collector's house, at a shell dealer, or even at an antique show. Please send in such reports; they should be interesting and also make this paper more of a community project.

NEW SPECIES, NEW GENUS, NEW FAMILY

Morris K. Jacobson

Everybody at some time or other must have observed how easy it is for people to see what they want to see and not what is really there to be seen. The writer was the major character in such an incident which fortunately did not turn out as badly as it might have.

In 1963 I made a short trip to El Salvador in Central America to visit my nephew and to collect land and fresh water shells. But there are few places in the world more discouraging for the collector of non-marine mollusks. The largely volcanic terrain is quite barren of land shells, even where the rainfall is heavy and the vegetation tropically lush. Nor are there many more mollusks to be found in most bodies of fresh water, and lovely lakes like Ilopango near the capital San Salvador, are quite bare. One excursion I took without much hope was to the Falls of Los Chorros near the city of Santa Tecla. They proved to be a lovely cascade of clear water running musically through a dense, foliage-covered ravine to empty into a large pond which had been converted into a public swimming pool. It was maddening to be in this deliciously damp subtropical forest with its exuberant vegetation, watered by a promising stream and not to find so much as a fragment of shell or any other sign of molluscan life, land or freshwater.

To keep the trip from being a complete waste, I doffed my clothes and went in for a dip. And there the first thing I saw as I dived in was a shell -- a highly turrited, richly sculptured, beautiful shell at the bottom of the pool. I reached for it. I seized it. I held it up in triumph. A freshwater shell such as I had never seen before in my life! My mind quickly reviewed the genera of Central American pleurocerid snails. I couldn't recall anything like it. A new species! A new genus! Who knows, perhaps even a new family! I knew that there were few records from El Salvador in the literature. Perhaps I was the first collector ever to have visited Los Chorros. Hence to find something new here was not inconceivable. Of course, the shell was bleached and quite dead. Of course, the hardest searching failed to turn up a second specimen. My ardor began to cool. Perhaps there were live ones at the headwaters of Los Chorros. Quick, a map! How to get there?

In the meantime the pool attendant -- armed, for some reason, with a fat pistol and a long sharp machete -- approached the crazy gringo who was acting most suspiciously. "What is it that you are doing, amigo mio?" he wanted to know.

"I am a scientist collecting caracoles to make studies in your so beautiful patria." (The combination of esoteric studies and crude nationalistic flattery works wonders in Latin America.)

"But, amigo, here there are no caracoles. For that it is necessary for one to proceed to Coatepeque or Ichenimchan. Here it is useless to search."

"Oh yes?" said I in triumph, "but behold that which I have just finished to find!"

He took, he looked, he felt -- then he smiled.

"But see, compadre, the bottom here in this pool is brown and muddy and not nothing pretty. People are not pleased to enter in it. For that reason from time to time we have them send white beautiful sand from the beach at La Libertad. And often it happens that among these sands appears a little shell. That it is which you have found."

He was right. Everybody knows what a Cerithium looks like, even I. But nothing disguises a Cerithium more completely than a pair of hot, eager eyes and a funny locality like fresh water far removed inland from the sea. This I didn't know then. But I know it now.

Later I learned that better men than I have fallen victim to such chimeras. Dr. William Healey Dall, one of the greatest of American malacologists, had a similar experience with less happy results. In 1896 he described a new genus and species dredged in 61 fathoms near Unimak Island, Alaska. He named the shell Anaplocamus borealis and noted that it looked very much like the freshwater shell Anculosa (now Spirodon) dilatata from Virginia and elsewhere in southeast U. S. The new species and genus were so unique that Johannes Thiele in 1929 with some hesitation established a new family for this shell alone. Established it and had it printed and published. But why such a startling resemblance to a freshwater species?

As a matter of fact it turned out to be just such a species. Dr. Harald A. Rehder of the United States National Museum solved the mystery. He found at the USNM sets of Spirodon collected at about the same time that Dall was working with his new species. Perhaps with the same dredges which had later been used to fish up Anaplocamus. Rehder wrote:

"Undoubtedly a mix-up in locality labels is to blame for this unusual state of affairs." Or perhaps the freshwater shell got stuck in a dredge later used for saltwater work.

In my fevered imagination, before the heavily armed, sharp-eyed Salvadorian park attendant cast cold water on it, I already had a name for my remarkable "new species, new genus." I was going to call it Aguadulcerithium hokium JACOBSON, 1963. I don't know what the etymology of Dall's name is, but mine means "freshwater Cerithium" in Spanish. The second part or the trivial name is of unknown origin: I cannot tell what it means.

DID YOU KNOW? -- Nudibranchs can absorb the stinging chemicals of Anemones, and thus render themselves distastful to would-be-predators?

THE UNIO AND THE BITTERLING

William Old, Jr.
American Museum of Natural History

A number of species of American fresh-water mussels, in their glochideal stage of development, attach themselves to the gills of passing fishes. Here they encyst for a time and later drop off in a new locale. This is an important method of dispersal in many species of mussels. Naturally, when fish are killed off through pollution of a stream, or by other causes, the mussels also disappear because the presence of their piscine host is a vital link in their life cycle.

Perhaps less familiar are the European fishes of the genus Rhodeus. There are several species of these small carps or minnows, usually called by the common name, Bitterling. The bitterlings utilize a specific kind of mussel, Unio pictorum Linné, as an incubator-nursery. During spawning season the female bitterling develops a protruding tube, long considered to be an ovipositor. When spawning commences, the male bitterling drives or escorts the female to the vicinity of a clam. The female lays her eggs in the siphon of the clam, where they are fertilized. The eggs develop within the body cavity of the clam, and the fry remain there until ready to venture forth.

The actual procedure has been the subject of debate for years. The accepted theory was that the eggs passed through the protruding tube of the fish into the inhalant siphon of the mussel. Jordan, 1951, gave detailed drawings of this method. On page 145 of the 15th editionof Innes' EXOTIC AQUARIUM FISHES a photograph which does not appear to have been retouched depicts the female bitterling with its tube inserted between the valves of a mussel.

The method currently accepted, and substantiated by close observation, movies and photographs, is that at the moment of egg-laying, the female darts in and ejects the egg into the exhalant siphon. It is "fired" with such force that it goes down the mussel's siphon and lodges in the gill chamber. Had eggs been deposited in the inhalant system, as formerly believed, they would have been ingested. The male's milt is believed to enter the inhalant siphon, pass through the stomach, with fertilization of the eggs taking place in the gills.

Further, at the moment of spawning the tubular appendage of the female is bent backward and the actual ovipositor is located anterior to the tube. The true function of the long tube is unknown. Perhaps its purpose is to excite the male. Burton, 1970, stated that the presence of a clam may excite a female bitterling, and she may lay eggs, even in the absence of a male.

Literature and further reading:

Burton, Maurice. ANIMAL PARTNERSHIPS. London, 1970.

Innes, William T. EXOTIC AQUARIUM FISHES. 15th. Ed., Philadelphia 1953.

Jordan, Herman J. HET LEVEN DER DIEREN IN HET WATER. Utrecht. 1951.

Perkins, Lawrence. ANIMALS. London. Vol 2, no. 14, Sept. 24, 1963.

Pitt, W. S. AQUARIST. London. May 1924; May 1949 (not seen).

TALES OF SNAILS

Foreword: Claudius Aelianus, writer and speaker, citizen of Rome, was born at Praeneste about the year A.D. 170. It was his boast that he had never been outside Italy, had never been aboard a ship, and knew nothing of the sea. Hence we must assume that his reports on mollusks (culled from his works by Charles Schmitt) comprise the ideas current in his time. Some were extremely fanciful, others obviously have the base of truth. (See NOTES 72.6, 73.5, 79.5, 117.3, 140.5)

VII.34 "The Purple Shellfish is exceedingly gluttonous and possesses an unusually long tongue which it thrusts through everything that it can. By this means it draws in whatever it eats, and by this means it is caught. And the way in which it is hunted is this: Men weave a weel (a wickerwork trap -- Ed.), small and of close texture, and inside there is a whelk and this has been inserted in the centre of the weel. Now the Purple Shellfish struggles to extend its tongue to the utmost and to reach its prey. And it is forced to project the whole length if it is not to miss what it longs for. And when it has inserted its tongue it sucks until the tongue is so swollen with surfeiting that the creature cannot withdraw it again. So there it remains caught, and the fisherman observing this, catches for the second time what has already been caught by its own gluttony."

Although we usually associate "purple" with the Muricidae, it does not seem to apply to the "Purple Shellfish" of which Aelianus writes, as the muricids generally cling to their prey while drilling a neat hole through the shell of their victim to reach the food within. However, Aelianus has given us, in the above text, an excellent description of the gluttonous character and manner of feeding of _Melongena_ _bicolor_ (the dwarf King's Crown), a Western Atlantic species. Some years ago we kept several of these _Melongena_ in an aquarium. No other species of mollusk, gastropod or bivalve, was safe within their reach. One evening we found a _Melongena_ with its extended proboscis stretched taut across the shell of a good-sized _Mytilus_ _edulis_, the forward section of the proboscis within the mussel whose valves were so tightly closed we felt the proboscis must be crushed. Not so. On opening the mussel we "found the tongue so swollen with surfeiting that the creature could not withdraw it again." In fact, it was a minute or more before the _Melongena_ could bring the mussel meat it had taken in up through the proboscis so that the proboscis could be retracted and the animal withdraw properly into its shell.

Melongena can extend its proboscis to a distance almost equal to twice the height of the animal's shell. In feeding, its tiny radula rasps the food into minute particles for passing back up the proboscis to the animal's mouth.

An excellent photograph of _Melongena_ _corona_ with proboscis extended in feeding is included in the mongraph "The Family Melongenidae in the Western Atlantic" by William J. Clench and Ruth D. Turner, JOHNSONIA, Vol. 3, No. 35.

Dorothy Raeihle

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The NEW YORK SHELL CLUB meets on the second Sunday of each month, September through June, in

THE AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: Sunday, SEPTEMBER 10th, 1972, at 2:00 P, M. in ROOM 319.

PROGRAM: REPORT OF THE ORIENT BEACH FIELD TRIP, with color slides,

REPORT OF THE 1972 AMU MEETING AND OTHER SUMMER ACTIVITIES

SHELL-OF-THE-MONTH, *Voluta musica*, by Sol Weiss

CLOSE-UP OF A LOCAL SHELL, by Dorothy Raeihle

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AMU AT GALVESTON JULY 9-14

Headquarters for the 38th Annual Meeting of the American Malacological Union, July 9-14, will be the Hotel Galvez, at 21st and Seawall, Galveston, Texas 77550. AMU President Arthur S. Merrill will host a welcoming hour Sunday, July 9th. Formal sessions, beginning Monday, July 10th, will be interspersed with a seafood dinner at Jamaica Beach, a choice of field trips, the banquet, and plenty of Texas hospitality. AMU members, their families, friends, and interested non-members are invited to attend what promises to be an excellent meeting on an interesting island.

Advance registration to June 23rd, $8.00; registration upon arrival, $10.00. Send advance registration to Mrs. Lake Fowler, 4508 Woodrow, Galveston, Texas 77550.

Rates at the Hotel Galvez are quoted at $14.50-15.50 for singles, $18.50-$21.50 doubles. There are camper and trailer facilities at the East Beach Travel Park, Galveston 77550, @ $4.00. All reservations should be made as early as possible.

THE PRESIDENT'S ADDRESS

Four years and two months ago, one of our forefathers (Tony D'Attilio, then head of the nominating committee) brought forth upon this incompetent a telephone call.

It had been, as we say in my profession, a bad year for Spanish dancers, and I had a part-time job at a clothing store when I got the call at work. Tony asked if I would be willing to be considered as a nominee for vice-president of the New York Shell Club. I agreed, feeling very honored and happy. It was the only good thing that had happened that week.

Two months later I was vice-president. Two years after that, president. And now, it's two years after that.

I have found myself at various times meeting speakers at airports, delivering packages to United Parcel Service at 9 AM, lugging film projectors down the streets (always on rainy days), scheming furiously for monthly programs, and making coutless phone calls at odd hours. But I have always been proud and happy to do so. And there is a good reason.

This is an innocent, positive, important, and fascinating interest that we have, in mollusks and their shells. These beautiful creatures ennoble us as we learn about them, and what we're doing, as we observe their behaviour or admire their beauty, or read what Man has written about them in the past, is a good thing. We reflect, thereby, what is best about our species -- our so oddly aggressive, bewildered, hopeful, cerebral and, at its best, also beautiful species. There is very little we could be doing that is as important as learning about the mollusks that share the "Water Planet" with us. Perhaps one day we will be more understanding neighbors.

I offer a few thoughts to leave you with:

Share your experiences and observations with your fellow members, for they are good things to share! Be unselfish and innocent in your observations. There are plenty of unknowns to baffle even lifelong experts, so accept ignorance humbly, but teach yourself hungrily. Learn from, and contribute to, our library. Enjoy your field collecting, share your material with museums, record your experiences on film, and share them with us! Think always, as you pursue your hobby, of sharing what you've enjoyed right here in this room, or in the Club Notes!

Let's all, in the future, work hard to make these meetings an enriching, rewarding, enjoyable, and ennobling experience.

Thank you all for your help and attention during my terms in office.

Mart Hulswit
June 11, 1972

The Club is most grateful to Retiring President Mart Hulswit for his work on our behalf. He served with devotion and imagination. Our thanks also to his staff and to the many individuals who contribute work that is usually tedious, and knowledge that is always interesting. They may have been mostly unsung, but are no less appreciated.

ELECTIONS

At the annual meeting June 11th Nick Katsaras, of the nominating committee, presented for consideration a slate of officers for the coming year. The proposed slate was accepted in its entirety and voted in by applause.

Treasurer Mathilde Weingartner, Recording Secretary Milton Werner, Jr., Corresponding Secretary Dorothy Germer, and Historian Nick Katsaras will continue in their present offices. New officers for the coming year will be President Dorothy Raeihle, Vice-President Frank Nelson, and Directors Harold Feinberg, Karl Jacobson and William E. Old. Continuing in non-elective positions are Librarian Harold Feinberg and Editor Karl Jacobson.

With the continued support and cooperation of our members, we look forward to another year of interesting and informative meetings.

FROM THE MINUTES OF MAY 14th

President Mart Hulswit opened the May meeting by describing the pre-opening festivities at John duPont's Delaware Museum of Natural History, at which Mart represented the Club. He remarked that the number of professional malacologists on the scene made it look like an AMU meeting. One of the outstanding exhibits of the Museum, which is devoted to small mammals, birds and shells, is a model of a tropical reef, recessed into a floor. Many of the visitors hit their brakes when they saw the sunken area before them, until they saw someone else walk across its glass cover. The official dinner was held aboard the former research vessel "Anton Bruun" (now, again, "The Williamsburg"), one of the Wilmington area's restaurants. Many of those at the table had been members of its scientific expeditions.

Mart also reported that the State of California now requires a permit for collecting in its intertidal zone, from the high tide line to 1,000 feet below the low tide line. The compelling reason is that tide pools have been picked clean. Failure to comply is punishable by fine and imprisonment. George Raeihle added that Virginia Key, in Miami, is closed to collecting, and that the Sanibel-Captiva Civic Association has requested shellers there to limit themselves to two live specimens, because of the depredations of the recent red tide. He also noted that any future buildings in Florida's Monroe County, which includes the Keys, must have approved types of garbage and waste disposal systems.

Harold Feinberg, who is a member of the American Museum staff, noted that the Club has been critical of the Museum's shell exhibits, which have been meager of late. He declared, however, that "The Age of the Shell has dawned at the AMNH," and that it is working on two permanent and two temporary shell exhibits. The titles of the first two are "Men and Mollusks," due to open in about two years, and "Shells of New York State," scheduled to open in six or eight months. He also noted that the current "Exhibit of the Month" is a molluscan one, featuring three live giant African snails. (This summer it features an exhibit of beautiful scallops. --Ed.)

The day's program consisted of exhibits of Pectens by several mem-

ters, plus slide pictures of notable specimens in both private collections and the Museum collection. Perhaps the most unusual specimen seen on the screen was "Pecten woodlocki" - a photo of an oil painting by artist Ethelyn Woodlock. She had rendered a two-eyed scallop, and the eyes are human, and clearly feminine. Dorothy Germer reported that she had become a shell collector because of a shell that had collected her. On a trip to the New Jersey shore she had been investigating the general marine life of the substrate manually, and an aggressive irradians had snapped its trap on an intrusive digit, apparently in an attempt at aquatic abduction. She escaped abduction, but not addiction.

Milton Werner, Jr., Rec. Sec'y

ACHATINA ON DISPLAY

The American Museum's "Exhibit of the Month" for May was of live Achatina. Three specimens of the Giant African Snail were on display in a case in the main foyer (Central Park West) with the story of their destructiveness to vegetation, and the story of Florida's fight against recent infestations of Achatina fulica in the Miami area. The specimens on display were two Achatina marginatra from West Africa, one of which had a shell five inches long, and one Achatina panthera from South Africa. Seeing the surprisingly large mass of the animal as it crawled, one could well understand the menace of a breeding colony. The three specimens were lent by three individual observers for the purpose of the exhibit. One snail has lived in captivity for five years. There has been no breeding.

Incidentally, Harold Feinberg of the NYSC had the daily chore of feeding and watering the snails, and cleaning their enclosure, during the time they were on exhibit.

As for the situation in Florida, an article by staff writer Tom Morgan in the Miami Herald of June 3, 1972, reports that the latest infestation of Achatina fulica in the Miami area (NW143-NW 147 Sts./ NW 13 Ct.-NW 13 Ave.) "has been controlled well." Doyle Conner, State Agricultural Commissioner, again pleads with the public not to transport Achatina to other areas. Jerry Roberts, spokesman for the Florida plant industry, says "For all practical purposes, we've eradicated the snails in the first two infested areas...We treat an area with poison pellets a year after we find the last snail. This is to make sure we get all the snails." He added that other animals had not been affected by the poison used.

dr

SIMON DE MARCO

Simon de Marco, owner of the well-known "Florida Marine Museum" at Fort Myers, died May 22nd after an extended period of ill health.

OPPORTUNITY: NYSC member Shirley Bakun has a 1557-specimen shell collection (cowries, cones, volutes) formerly owned by a South African collector, and she'd now like to sell it. For all details contact Mrs. Bakun at 14 Terrace Court, Old Westbury, N.Y. 11568, or phone 516: 997-5737.

MAN'S EFFECT ON MOLLUSKS

by William E. Old, Jr.

Through the activities of man, many species of mollusks have become endangered. Although only one species, Papuina pulcherrima from the Admiralty Islands, is listed in the International Redbook of Endangered Species of Wildlife, many of our native North American species are in jeopardy, while some are already extinct.

Among these are the freshwater clams and snails. The United States was endowed with the richest fauna of freshwater mollusks on earth. However, today many of them are endangered, while some are extinct, or are considered to be extinct. Damming, silting, and pollution of rivers and streams have contributed to the decline of many species of mussels. Some of those displayed here have not been collected alive in the 20th century.

Other mollusks are threatened by over-collecting. The large Pink Conch, Strombus gigas, has a wide distribution in the West Indies. This marine gastropod is a staple item of diet throughout most of its range. Also, in many areas the shells themselves are in demand for the shell and shell novelty trade. In Florida this species occurs only along the Florida Keys. Legislation offers some protection for the Floridian populations.

The rare Liguus tree snails occur also in South Florida. Many forms have a range restricted to a single key or hammock. Over-collecting, fire, destruction of the habitat by man, hurricanes and predation by natural enemies have contributed to their decline. Several hammocks were recently destroyed to make way for the proposed Miami Jetport.

On the other side of the world, in Manus Island, largest of the Admiralty Islands, north of New Guinea, the beautiful leaf-green tree snail, Papuina pulcherrima, is endangered. In this case, the shells are collected as a side line of lumbering. After the trees are felled, collectors gather the snails and export the shells to shell dealers.

While many species of mollusks have been adversely affected by the march of civilization and/or progress, there are a number that have adapted, and spread along with it. In Europe, several of the larger edible snails are reputed to have been taken along by the Roman Legions as the Empire expanded through the conquests in the East.

A number of European land snails and slugs (shell-less land snails) have been distributed around the world along with agricultural products. As Western Man went through the period of exploration and colonization around the globe in the past 500 years, many species of mollusks were taken along - more or less inadvertently - with plant material and fruit.

Many introduced species have become serious agricultural or horticultural pests, since they feed extensively on man's crops and garden plants. Notable among these is the European Garden Snail, Helix aspersa.

Another introduction is the so-called Giant African Snail. Its original home is lost in antiquity, but is assumed to be East Africa. Through commerce it spread across the Indian Ocean, and in the pres-

about the size of small grapes. (It occurred to me that Karl Jacobson, with his flair for molluscan gastronomic delights, might have been moved to attempt a small omelet!) The researchers use special incubators to hatch the eggs of various species, breeding second generations for further study.

I was impressed by the realization that this research facility, matched by only a few similar centers in the world, represents a spearhead of man's study of the mollusks.

My visits to the museum were full of friendly encounters and conversations with the staff. One time, as I emerged from the study collection after taking a break from hours of file cards and books, I saw the main hall steaming and soaking in several inches of hot water. White-smocked scientists, some with rolled-up trouser cuffs and barefoot, urgently criss-crossed from room to room, salvaging various objects -- like bespectacled ants after a rainstorm. Among them was Dr. van der Schalie, struggling with cartons and stacks of booklets. A hot water pipe had burst, flooding a good portion of the wing, and the latest issue of "Malacologia", ready for mailing in stamped manila envelopes and cartons, was in jeopardy. I pitched in, and, to Dr. van der Schalie's relief, only the bottom four envelopes in each carton had been soaked to a damaging degree. We separated those copies and placed the dry ones on the "high ground" of some empty shelves in an office. The loss was minimal, and everyone seemed to enjoy the novelty of the occasion in good-natured fashion.

I provided house seats to my play for the folks I knew at the Mollusk Division. It was quite a good show, which I believe they enjoyed. It starred Miss Cathleen Nesbitt, and a certain conchological bibliophile as her son. We got favorable reviews, which to an actor is tantamount to personally finding a gloriamaris! One of the other cast members later asked me, after absorbing a five-minute explanation of the difference between a malacologist and a conchologist, "Does that make you a dramalacologist or a theatriconchologist?" I had no answer for that one. In fact, I'm still not sure.

On my last day in Ann Arbor, with a cab waiting to take me to the airport, I went to thank Dr. van der Schalie for his hospitality. I found the good doctor at his desk, and he rose to greet me with his usual friendly smile. As we said goodbye, our conversation turned to his own collection of malacological literature, beautifully bound and arranged on the shelved walls of his office. He sighed proudly, and said that he would probably leave it to the University some day. Pointing to the complete run of "Basteria", I asked if he had any difficulty with the Dutch language. He said he read it fluently, because his parents had been from Holland. Well, so had mine, and Dutch was my first language, so the next few minutes were spent happily conversing in Dutch, both of us expressing regret that we had not been aware of this earlier in our acquaintance. At this point, both Time and the cab driver glared over my shoulder, so we said our farewells in Dutch.

I walked quickly down the hall, pausing only for a moment to look again at a sign on an oak door, "Bryant Walker Library."

A NOTE ON "WONDERS OF THE WORLD OF SHELLS", DODD MEAD, 1971

This book, designed for children from 8 to 12 years, was recently reviewed most generously by a highly knowledgeable authority in malacology. In his as a whole favorable discussion, the reviewer pointed out some errors in the text which he most graciously called "slight defects." Nevertheless, we, the authors, feel that at least two of these points should be conveyed to the owners of copies of our book to the end that they may make pertinent corrections in the text.

On page 27, where we discuss the role of veligers, the following note, taken verbatim from the review, should be added:

> "Temperature and food have recently been found to effect the duration of planktonic stages greatly, and most planktonic marine larvae have a swimming-crawling stage when they can actively choose or avoid substrate with which they come in contact."

And on page 10, where we very briefly refer to the formation of the shell, it would be wise to have your kids add the following, also being word for word the reviewer's own:

> "There is originally a proteinaceous organic matrix in which calcium carbonate (lime) is crystalized."

These are, both of them, important statements and we wish to express our gratitude to the reviewer for his kindness in calling them to our attention. We are sure that our readers, especially the younger ones, will feel the same way.

Morris K. Jacobson
William K. Emerson

OF THE JUNE 10th FIELD TRIP TO ORIENT BEACH STATE PARK

Whoever missed the field trip missed a nice day. At Orient it was sunny and especially clear. True, the weather was cool and windy, so few waded and none snorkeled, but there were some very interesting finds including Acmaea, Anachis, Chaetopleura and Melampus.

Will those of you who took pictures bring your slides to the September meeting? We'd also like your report on the species you collected or observed, so that a general report can be completed.

Twenty-seven made the trip to Orient, plus one writer of Nature columns, Maxwell C. Wheat, Jr., who also seemed to be enjoying himself. He reported our field trip in "Newsday" of June 16, page 17A.

Dorothy Raeihle.

JUNE, 1972, SUPPLEMENT TO ROSTER OF NEW YORK SHELL CLUB

We welcome our new members, and bring you to date on changes in address since our supplement of January, 1972.

NEW MEMBERS

ADEY, Mrs. Dorothy W.	Lee's Hill Road, New Vernon, N. J. 07976
BAKUN, Mrs. Shirley	14 Terrace Court, Old Westbury, N. Y. 11568
BERGER, Mrs. Ida S.	197-70 D Peck Ave., Flushing, N. Y. 11365
CAUBERE, Miss Monique	River House, 531 North Broadway Upper Nyack, New York 10960
DELGADO, Mr. Gilmore	87 Newfoundland Ave., Huntington, N. Y. 11742
GRAFF, Mr. Warren	220 West 13th Street, New York, N. Y. 10011
GREGORY, Miss Lynn	15 Woodcrest Drive, Old Bridge, N. J. 08857
HOMAN, William Chase & Son	77 Dogwood Lane, Manhasset, N. Y. 11030
JASON, Mrs. Vera	444 Central Park West, New York, N. Y. 10025
KNITTEL, Mrs. Mary Miss Bridget	9 Bancroft St., East Setauket, N. Y. 11733
PRAETORIUS, Miss Marcelle	48-03 Overbrook St., Douglaston, N. Y. 11362
REIMANN, Mr. & Mrs. Hans	8 Rande Drive, Wayne, New Jersey 07470
SHOR, Miss Betty Ann	309 West 57th Street, New York, N. Y. 10019
SPRINGER, Miss Linda	6 Bess Court, Brentwood, New York 11717
TEITGEN, Miss Mathilde	45-25 248th St., Little Neck, N. Y. 11362
VON DER HEYDEN, Mrs. Cecelia	Walnut Road, The Terraces, Rocky Point, New York 11778

CHANGES IN ADDRESS

BOGART, Mrs. John	1 Sherman Square, Apt. 41K, New York, New York 10023
FOX, Robert A.	445 East 80th Street, New York, N. Y. 10021
MC DOUGALL, Mrs. Grace	Plum Street, Inverness Highlands West, Inverness, Florida 32650
MERRILL, Dr. Arthur S.	Box 633, Route 5, Easton, Maryland 21601
RAITH, Mr. Oscar M.	1711 Randolf Drive, York, Pennsylvania 17403
STEELE, Mrs. Jerry	Plum Street, Inverness Highlands West, Inverness, Florida 32650

CHANGE OF NAME

Miss Severine Grieb is now Mrs. Leonardo Hernandez
90 Park Terrace East
New York, New York 10034

NYSC NOTES NUMBER 184 SEPTEMBER 1972

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FOUNDED JAN. 1949

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These NOTES are distributed by mail to all members of the NEW YORK SHELL CLUB, Inc. Dues: Full membership $4.00 per year, $1.50 additional for each of other members of the same family -- with one copy of NOTES per family. Corresponding membership $2.50 per year. A limited number of back issues of the NOTES are available at $.30 postpaid per single copy; also bulk rates. Items and articles for publication in the NOTES should be sent to the Editor. The Corresponding Secretary should be notified promptly of any change in your address.

The NEW YORK SHELL CLUB meets on the second Sunday of each month, September through June, in

ROOM 319, AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: SUNDAY, OCTOBER 8, 1972, at 2:00 P.M.

PROGRAM: ANCESTRAL MOLLUSKS FROM THE EASTERN COAST WITH SOME OF THEIR DESCENDENTS. A symposium, with exhibits and color slides.

SHELL-OF-THE-MONTH by Nick Katsaras

CLOSE-UP OF A LOCAL SHELL by Dorothy Raeihle

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EXHIBIT OF AREA SHELLS

The long anticipated EXHIBIT OF NEW YORK STATE SHELLS is open. You will find it on the first floor, in the corridor that runs between the alcove housing the Evelyn Miles Keller Shell Exhibit and Education Hall. (Turn left from the 77 th Street foyer.)

The shells are beautifully arranged on large panels, six on either side of the corridor, with one side devoted to marine mollusks, the other to land and fresh water species. The exhibit features 190 species most commonly found in the area, with extremely small shells such as Gemma, newly hatched Busycon, Odostomia, etc. shown under magnifying glasses and/or accompanied by large scale drawings. (We learn that NYSC member Anthony D'Attilio prepared some of these drawings while he was working in New York.)

Among the shells on display are specimens of a size and quality that we do not expect to find in our beachcombing, and some unusual species that are represented in few collections.

The exhibit was conceived by Dr. William K. Emerson, Chairman of the Department of Living Invertebrates. In the Museum's press release of August 17th he kindly mentiones that the members of the New York Shell Club assisted in the creation of the exhibit. Studying the exhibit, we realize that our part was very small, but we are proud to have this bit of proprietary interest.

AMERICAN MALACOLOGICAL UNION ANNUAL MEETING
July 9 - 14, 1972

It was a good meeting when members of the American Malacological Union convened for the thirty-eighth time, but then they always are. The place was Galveston, Texas, and Texas folk have a reputation for doing good things in a big way. The crowd was about right for friendly rapport (125, give or take a couple) and one or two built-in breaks provided opportunity for sitting and chatting, not possible when the crowd is too large and the pace too frantic.

The social hour was launched quite early when Dr. and Mrs. Arthur Merrill presided at the President's cocktail party on Sunday evening. A lively beach party spiced Monday evening, and the annual dinner on Thursday was as always the highlight of the meeting.

Of course, the real purpose of these meetings is the delivery of scientific papers on varied molluscan themes; these were given in the auditorium in the resident Hotel Galvez, an appreciated feature. Titles and abstracts will be printed in the AMU Bulletin for 1972.

At the annual business meeting on Thursday afternoon the following officers and councillors were elected to serve during 1972-73: President, Dolores S. Dundee; President Elect, Harold D. Murray; Vice-President, John B. Burch; Recording Secretary, Marian S. Hubbard; Corresponding Secretary, Paul R. Jennewein; Treasurer, Myra Taylor; Publications Editor, Arthur H. Clarke. Councillors-at-Large: Kenneth J. Boss, Anne B. Speers (second year, two-year term); Dorothea Franzen (first year, two year term); Lt. Col. Corinne Edwards (first year, two year term).

On Friday three field trips provided land, freshwater and beach collecting to satisfy the preference of all, and on Saturday, getaway day, came the wrench of parting for yet another year.

Margaret Teskey

The 1973 meeting will take place some time early in August in Delaware, probably at the University of Delaware in Newark, Delaware. Details will be sent later as they are arranged.

TOM IREDALE - 1880 - 1972

The death was announced, at 6:30 A.M. on the 12th of April, 1972, of Mr. Tom Iredale, a prominent Australian student of shells.

Tom joined the Australian Museum in 1924 to take up the curatorship of the Shell Department after the death of Charles Hedley.

He retired in 1944, but was active until very recently.

KINGDOM OF THE SEASHELL, R. Tucker Abbott. 256 pp, 264 pls. (90 in color). Crown Publishers, Inc., $14.95

Presented by the publisher as "The first truly comprehensive survey of Seashells", this latest of molluscan publications is all of that and much, much more.

In no sense an "arty" book, nevertheless the dozens of color plates are outstanding and present not only rare and beautiful shells but their architects, in seldom-seen fashion. A cuttlefish squints into the camera in contrast to a startled conch whose staring pop eyes reflect anxiety and seeming indecision as to the course of action to follow; Cymbiola nivosa deposits a plume of pearly eggs upon the sandy ocean floor. The reader will appreciate all explanatory captions appearing with the plates rather than at the beginning or end of the volume.

A dozen chapters cover every conceivable angle likely to interest the beginning collector, the advanced collector, the professional collector but most especially the non-collector, thus introduced to the fascinating world of shells. How and where mollusks live, feed and reproduce is basic information and briefly covered here, but not too many are aware of the role shells have played from the beginning of history, in commerce and industry, in ancient, medieval and modern art. Botticelli's Venus emerging from a seashell is familiar to everyone, but how many have seen a sailor's valentine? A two-page spread portraying this bit of Victorian "camp" art is breath-takingly beautiful! Today's shell art and jewelry making has not been neglected, together with an accounting of the earlier craft of weaving the silken byssus of pinna shells, and the use of Mediterranean murex as the source of royal purple dye, described in detail.

Famous shell collections are touched upon, and there are brief biographies of some of the most prominent malacologists the world has known. Rules for shell shows and auctions are here, and the book concludes with a comprehensive bibliography classified as to Art, History and Literature, Early Books, Monographs, Textbooks, Popular conchology, Pearls and Special Families, finally a listing of popular shell books arranged in geographical order.

Truly, this is a book for everyone.

Margaret Teskey

A MEMO TO MEMORIZE

These are a few of the signs and symbols that appear most often in the literature concerning mollusks:

( ) = If the author's name is in parentheses, it indicates that it is his species, but that the generic name has been changed from the one in which he originally placed it.

ca. = circa = approximately. Used with time.

cf. = confero = to be compared with the name or citation mentioned.

loc. cit. = locus citatus = cited before in the same discussion, passage quoted.

ibid. = ibidem = in the same place (book, article, etc.).

sic = thus = exact reproduction of the original, including errors.

e. g. = exempli gratia = for example.

op. cit. = opere citato = in the work cited, and also
= opus citatus = the work cited.

author's name in quotes, e.g. "Gundlach" Pfeiffer means Pfeiffer described the species, but credited it, or, most likely the name alone, to Gundlach. Sometimes Pfeiffer would write "Gundlach MS" with the same meaning. Such a name is usually credited to the real describer, in this case Pfeiffer.

"non" in front of a name means that the name preceding is preoccupied: thus "Odontostoma Orbigny 1842, non Turton 1829 means that Turton used the name (in another sense) 13 years before Orbigny did, and that the Odontostoma of Orbigny must thus be renamed.

NOTE: The very lively Newsletter of the Boston Malacological Club, one of the oldest shell clubs in existence, has run, since its first publication three years ago, a very valuable and interesting column entitled "Article of the Month." The author is Dr. Henry D. Russell and he has most graciously granted us the privilege of running these items in the NYSCN simultaneously with the NLBMC. This is the first of ten items thus, which we are happy to be able to run this year.

editor

ARTICLE OF THE MONTH

In a most interesting and well illustrated article entitled "Divaricate patterns in pelecypod shells", Dr. Adolf Seilacher discusses pelecypod shell form, function and color in Lethaia 5: 325-343, 1972. The shingled divaricate ribs occurring in several unrelated groups are highly functional and related to specific burrowing processes. The most aberrant features, obliqueness and ambivalence, are shared by a variety of color, mineralization and groove patterns both in the functional and nonfunctional fields. Their basic function is assumed to be less controlled by adaptation and phylogeny than by the common principles of shell growth.

OPISTHOBRANCH STUDY

by Eveline Marcus

For fifteen years my late husband, Ernst Marcus, Professor of Zoology at the University of São Paulo, Brazil, and I have been collecting gastropods from the coast of Brazil and classifying them as well as others from around the world. Generally we restricted our studies of systematics and anatomy to the opisthobranchs, a well defined group, for which it was possible to obtain the greater part of the necessary bibliography. The literature on the shelled subclass prosobranchs, mainly describing their empty shells, is so vast that we would have needed the background of a complete museum library. Among the opisthobranchs there are also several orders which possess a shell, and these are often only described from the empty shell. In some cases the careful study of the well preserved shell is not sufficient to decide the systematic position of a species. It happened to us that we collected an acteonid in the mud of our coast and found its shell to completely conform with the figures of the western Atlantic "Acteon" punctostriatus (C. B. Adams, 1840) described from Buzzards Bay. The radula, that is the rasping tongue, was identical with the only known one of the genus Acteon, that of the European A. tornatilis (Linné). Hence we were justified to call our animal Acteon punctostriatus.

When I came to North America (1969), I was interested in all the opisthobranchs I could obtain, for comparison with the Brazilian ones. I was very glad to find Acteon punctostriatus alive. How great was my surprise when I prepared the radula and found it completely different from that of the European and our Brazilian species. The latter have innumerable tiny teeth, while the North American form had five longitudinal rows of large teeth on either side of the radula. An acteonid genus characterized by its radula with five rows of teeth had been described from South Africa in 1925 by Johannes Thiele with the name Pseudactaeon. So I labeled my North American specimens Pseudactaeon punctostriatus and I had to change the specific name of the true Acteon from Brazil. As I was keen to look further at acteonids, California friends gave me preserved specimens of two California species of "Acteon". One was a real Acteon with the typical radula of many tiny teeth, while the other had the five-row radula like that of the North Atlantic species. While I was rather proud of my discovery, I found a paper of Tadashige Habe (1956) who, in Japanese and in English, corrected "The systematic position of three American Seashells." Habe, a famous molluscan specialist, had earlier observed the same fact for the same species as I, and had established the validity of the genus Rictaxis for the pretty striped California "Acteon" punctocaelatus (Carpenter, 1864) with the non-Acteon radula. The genus Rictaxis had been created by William Healey Dall in 1871 for A. punctocaelatus due to some slight differences in the columellar fold of this species from that of the other Acteon. Now Thiele's genus Pseudactaeon became a synonym of Rictaxis, and I had to change my labels of the North American Atlantic species again, from Pseudactaeon to Rictaxis.

The acteonids are placed near the prosobranchs, at the root of the opisthobranchs. They have an operculum and an uninvaginable male organ, as the former. They are hermaphroditic and have a folded, not a pectinate gill, as the latter. They live plowing through the surface

of the muddy bottom below the tidal zone. The food of the European species was not observed. The species I could study feed upon polychaetes, either engulfing whole segments, or their stomachs contain masses of polychaete tentacles.

W. H. Dall described 23 species new for science of "Acteon", 17 of which were from the western Atlantic. They were all characterized only by differences of the shell, the sculpture, or the columellar fold. Several of them are not figured, and of none of them is the radula known, so that their systematic position remains uncertain.

Hence there is still a wide field for studies, to collect and to preserve acteonids with the animal, and to classify them to the genus with their radula and to the species with their shell. The result will be many "new combinations", that is: known species placed in another genus than the original one, and many synonyms, that is: two or more previously described and named species are recognized as one and the same, and have to be labeled with the name of the oldest description. Possibly there might also result one or the other new species, the characters of whose shell does not conform with any of the previous descriptions, but this is improbable, as more than thirty species have already been described from the middle and western Atlantic.

(Reprinted from MIAMI MALACOLOGICAL SOCIETY QUARTERLY, Vol. 5, No. 4)

ON A MIMETIC OPISTHOBRANCH

by Eveline Marcus

In 1890 the famous malacologist, Salvatore Trinchese, received from the equally famous Lo Bianco of Naples, Italy, a queer green nudibranch from Capri and described it as Bosellia mimetica (1891). "Mimetica" was a very well chosen name. The animal is so similar to the alga Halimeda, on which it lives and feeds, that it was not found again until 1956.

In the treatises of Thiele (1931-35) and Hoffmann (1932-40) Bosellia mimetica was not mentioned at all, and Mme. Pruvot-Fol (1954) in the "Faune de France" (p. 180) treats it as "species incertae sedis".

In 1956, young zoologists of the Swiss University of Basel, studying the Mediterranean opisthobranchs at Villefranche, brought the strange creature to the laboratory and could identify it with Trinchese's animal (Portmann, 1958).

In 1959 a Brazilian zoologist, Diva Diniz Corrêa, collected nemerteans, opisthobranchs and flatworms at Curaçao, Netherland Antilles, and gave some groups to us* for studies. The vial containing flat green blobs was, in spite of her insistence, put among the polyclads, until we found Portmann's papers and that of R. Becker (1960). Then it was quite evident that we had the same animal as the original species, so we considered it as subspecies Bosellia curasoae of mimetica and published it in 1970.

In 1969, collecting on Grassy Key, Florida, I saw many tufts of Halimeda, gathered a bucketful and took it to the Institute of Marine Science in Miami. After a few hours the first tiny greenlings appeared on the surface of the water; next morning there were eight of

them. Back in São Paulo, Brazil, I was surprised to find the animals rather different from those from Curaçao. They were described and published as a new species (1972, in press).

When I returned to Miami in 1970, I was eager to obtain some more specimens. We went to Grassy Key, to collect at the same locality, but a "NO TRESPASSING" sign made it impossible. On my following visit, 1972, I took Halimeda from off Key Biscayne and from the first lot arose a single real fat green monster (12 mm), doubtless a true Bosellia. It was a third species! All searching during the following fortnight was in vain, but four hours before my plane left, Lt. Col. Corinne E. Edwards of Coconut Grove, Florida, brought another sample of Halimeda to the laboratory with very small Bosellia rising from it. These turned out to be a third species for Miami! They were typical mimetica curasoae. After my return to Brazil, Corinne collected Halimeda and sent many specimens of all three Miami species. I can now complete their descriptions and may soon have that "monster" worked up in manuscript as a new species.

As are some other opisthobranchs, Bosellia is very much specialized to its food plants. Unfortunately there is no Halimeda on the coasts of southern Brazil, so that I cannot expect to find any Bosellia there. From Joel W. Hedgpeth's "Between Pacific Tides" I see that the California coast also does not have the proper food for the genus. Perhaps some of the readers of this paper might be collecting in regions where Halimeda thrives and will be lucky enough to find one of these attractive though inconspicuous Bosellia rarities.

June, 1972

*Dr. Ernst Marcus, Director of the Zoological Institute of the University of São Paulo, Brazil, who died on 30 June 1968, and his wife of 44 years, Mrs. Eveline du Bois-Reymond Marcus, Caixa Postal 6994, 01000 São Paulo, Brazil.

Papers cited:

Becker, Renate, 1960, Rev. Suisse Zool. 67: 194-201.
Hoffmann, Hans, 1932-40, in Bronn's Kl. Ord. 3 (Abt.2) Buch 3, 1337 pp.
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Thiele, Johannes, 1931-35, Handbuch der systematischen Weichtierkunde.
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(Bosellia is pictured also in Marcus, 1970, Curaçao = "Opisthobranchs from Curaçao and Faunistically Related Regions" Vol. 33, fig. 94 and 95.)

NYSC SHELL SHOW

The New York Shell Club's first shell show is scheduled to be held at the Bergen County Museum in Paramus, New Jersey, April 23-28, 1973. Mrs. Dorothy Germer heads the committee of NYSC members working on the project, with William E. Old acting as Science Director.

NYSC NOTES NUMBER 185 OCTOBER 1972

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ROOM 319, AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: SUNDAY, NOVEMBER 12, 1972, at 2:00 P.M.

PROGRAM: WAYWARD BEACHES AND WANDERING DUNES (with slides)
Mathilde P. Weingartner of S.I.I.A.S.

STUDIES ON THE SHARK EYE, POLINICES DUPLICATUS
Morris K. Jacobson

THE TIDEWATER SHELL-SHOW (with slides)
William E. Old

SHELL-OF-THE-MONTH --- CONUS BENGALENSIS
William E. Old

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Collecting on bird island	Cherita Stark	p.5 & 6
Reading shells	H. C. McMillin	p.7

ARTICLE OF THE MONTH

You may have wondered about the "growth lines of mollusks. These are explained by John W. Evans in an article entitled "Tidal Growth Increments in the Cockle, *Clinocardium nuttalli*", in Science 176:416, April 1972. Sets of growth lines found in the shell of this mollusk are extinguished every 13 or 14 increments only to be replaced by other sets, half an increment out of phase with the first. It is assumed that the lines are deposited during low tide. The average duration of an increment is 24 hours and 50 minutes.

Henry D. Russell

QUESTION - What causes the black color of mud in inlets and shallow areas?

ANSWER -- This black color is caused by the prescence of iron sulphide. Hydrogen sulphide, a gas that has the sulphurous odor of rotten eggs, forms in areas where there is very little available oxygen and is produced by the action of certain bacteria on decaying organic matter. This gas combines with iron to form iron sulphide, the black material found in the mud. It is particularly characteristic of muddy tidal flats.

EX - "SEA SECRETS" March/April 1972.

MINUTES

At the September meeting, two members reported on having shared the pleasures of their hobby, during the summer, with large "audiences." Teen-ager Jordan Starr exhibited a world-wide selection of 40 shells from his collection in the Shelter Rock, L. I. library. Cecelia Von der Heyden exhibited shells from around the world at the Port Jefferson, L. I. library.

Voluta musica was the Shell-of-the Month. Sol Weiss showed nine beautiful specimens, in a wide range of size and coloring, that he collected at Tobago, snorkeling at night in five to ten feet of water.

Karl Jacobson reported the reappearance of *Donax fossor* in the New York City area, from which it disappeared after the summer of 1955. It bobbed up at Beach 40th St., Rockaway. Karl then reported on the AMU meeting in Galveston.

The pictorial feature of the meeting was a showing of slides from the 1971 and '72 field trips, both to Orient Point. Mart Hulswit reported having collected *Anachis translirata* there this year - an addition to our checklist for Orient.

President Dorothy Raeihle reported that *Acmaea testudinalis* brought home alive from Orient had laid eggs in her aquarium, and that the eggs had hatched. The swimming larvae lived for only a short time, however. She then gave a presentation on *Ilyanassa obsoleta*, noting that it is found from the south side of the Gaspe peninsula, Canada, to St. Augustine, Fla., and that its fossil remains are found in Miocene and Pleistocene deposits. Karl Jacobson added that, although it is thought of as a scavenger, *obsoleta* also eats diatoms.

NEW ADDITIONS TO THE NEW YORK SHELL CLUB'S LIBRARY

Dr. William K. Emerson has kindly donated six more papers to our library. They are:

A New *Cerion* from Bimini, Bahamas (Mollusca). By William J. Clench. American Museum NOVITATES No. 1794, October 3, 1956, pp 1-3, 2 pl.

On Two Sacoglossan Slugs from Brazil. By Eveline and Ernst Marcus. American Museum NOVITATES No. 1796, October 3, 1956, pp 1-21, 23 fig.

Geographic Variation and Hybridization in the Populations of Bahama Snails (*Cerion*). By Ernst Mayr and Carmela Berritto Rosen. American Museum NOVITATES No. 1806, December 7, 1956, pp 1-48, 9 fig.

New Land Mollusca from the Admiralty and Bismarck Islands. By William J. Clench. American Museum NOVITATES No. 1863, December 6, 1957, pp 1-6, 5 fig.

On Western Atlantic Opisthobranchiate Gastropods. By Ernst Marcus. American Museum NOVITATES No. 1906, August 13, 1958, pp 1-82, 111 fig.

Results of the Puritan-American Museum of Natural History Expedition to Western Mexico, 3. The Terrestrial Mollusks. By Morris K. Jacobson.

American Museum NOVITATES No. 1899, July 22, 1958, including description and figures of *Bulimulus* (*Puritanina*) *harribaueri*, new species.

AUSTRALIAN SHELLS, by Barry R. Wilson and Keith Gillett, 1971. 168 pp, 106 colours plates, 33 black and white plates and diagrams. This beautiful and informative book has been purchased by the Club for our library.

HOW OLD ARE THE STORIES OF THE "MAN-EATING CLAM"?

Charles Schmitt found this one in the writings of Claudius Aelianus, citizen of Rome circa 200 A. D.:

X.20 "It seems that there are other Shellfish besides in the Red Sea, whose shells are not smooth but have certain grooves and hollows in them. These shells have sharp lips and when they close they fit into one another, as they make the points interlock, so that it seems as if the teeth of two saws came together. And so if they catch any fisherman swimming and bite any part of him they cut it off, even though there be a bone within the bitten part; more than that, if they bite at a joint, they cut it off at once; nor is that to be wondered at, for their bite is exceedingly sharp."

It is only of the giant clam, *Tridacna gigas*, that we hear such tales. Although divers may have been hurt and even drowned while attacking the huge clam, which closes its valves in self defense, this is the first account we've read that implies that clam chases man.

The *Tridacna* are sedentary. In INDO-PACIFIC MOLLUSCA, Dr. Joseph Rosewater writes of Tridacnidae: "As adults they are incapable of locomotion and rest with the umbos and hinge downward and the free edge of the shell uppermost. Depending upon the species they are either unattached or in burrows in the coral, tightly fastened with a byssus."

Dr. Rosewater discusses the six recent species, all restricted to the Indo-Pacific, of which *Tridaca gigas*, *Tridacna crocea*, *Tridacna derosa* and *Hippopus hippopus* seem to have as their western boundary the Bay of Bengal -- nowhere near the locale given in Aelianus's report, but many-times-told tales usually pick up inaccuracies. However, *Tridacna maxima* and *Tridaca squamosa* range further west, to East Africa and the Red Sea. These two species grow to about 14" and 16" respectively, and burrow into coral where they attach by byssal threads, those of *squamosa* being "weak but copious" (ibid).

But could Aelianus's tale have been passed down to him through the centuries? Dr. Rosewater's monograph includes a picture of *Tridacna aegyptiaca* Chenu, Fossil (?), Gulf of Suez. He remarks that the deeply cut fold interstices may be the result of breaking and weathering. But if its form is natural, this possible ancestor of *squamosa* had sharp, cutting edges capable of inflicting damage to the unwary.

The word "Tridacna" is Latin plural and is defined as "a kind of oyster." It is from the Greek "tridaknos" from tri = three and daknein = to bite, = eaten at three bites. The original meaning seems to be that man takes three bites to eat this particular "oyster". The myth would have it that the "oyster" makes three bites out of man.

Literature cited: "The Family Tridacnidae in the Indo-Pacific" by Joseph Rosewater, Division of Mollusks, USNM. INDO-PACIFIC MOLLUSCA vol. 1, no. 6, April 30, 1965.

Dorothy Raeihle

A SLUG EXPERIMENT

Hermann Löns (1866-1914) was a prominent German novelist and poet and also an enthusiastic student of mollusks. He was killed September 27, 1914, at the start of the First World War.

In the latest Newsletter of the German Malacozoological Society (Deutsche Malakozoologische Gesellschaft) there is a reprint of one of his malacological articles which had appeared in 1911 in the newspaper Hannoversches Tageblatt. In it the author discussed some observations he had made on the common European slug, *Arion empiricorum*, which he had heard a little girl on a bicycle call a disgusting creature (ekeliges Tier) just before she ran over and squashed it on the bicycle path. Among other things, Löns discussed the fact that such birds as sparrows, crows, storks and several small mammals -- normally enthusiastic molluscophages -- energetically rejected all his attempts to feed them the *Arion* slugs. Finally, one greedy sparrow did swallow a slug and (I translate) "immediately the morsel shot out of his mouth in a wide arc and landed on the ground. The trusting bird now indignantly renounced all confidence in his food giver and no longer wanted to have anything to do with me.

"That's very interesting," thought I. And since I, as a young disciple to a stern and demanding science did not have the right to let vulgar food and taste prejudices stand in the way of the pursuit of knowledge, I decided to find out what caused the bird's violent reaction. Therefore, I rubbed my finger over the back of a fat and slimy black slug and put the slime-covered finger to my tongue. The result was immediate and drastic. First I behaved very much like the unfortunate sparrow; next I forced myself to drink a full glass of cognac. And when that didn't help, another bigger one, and then still another. Thirdly I lost all my appetite for three days. And fourthly I lost the affections of a very pretty girl whom I had stupidly told about my experiment. This last resulted in a severe attack of Poetitis which lasted for three weeks, during which I filled a big bureau drawer with scores and scores of melancholy love poems, none of which fortunately for posterity (Nachwelt) managed to survive, mainly because the pretty girl turned out to be not the prettiest in the village, and she was furthermore the only one who knew of my snail-tasting adventure (Schneckenleckerei).

"But I felt repaid for the loss of this lovely maiden by the discovery of the disgusting odor (Ekelgeruch) and evil taste (Uebelgeschmack) of the slug and the connection this had with the amazing abundance of the slippery (schlüpfrig) creatures in the region. At any rate, I never tried my snail-tasting experiment again.

"When I later read that during the Thirty Years War starving peasants were reduced to eating this slug, then I first comprehended the full horror of this dreadful time. I also found out that an excellent cough remedy is made of these slugs: they are dipped in sugar and the resulting syrup is forced upon the patient, with the result that he immediately suppresses the cough out of dread that he might be given a second dose. The same thing must happen when wagon drivers use these slugs instead of wagon grease to grease their axles; the axle immediately stops screeching from fear that it might get a second helping of the stuff."

MKJ

COLLECTING ON BIRD ISLAND

For the past three years, I've been conducting a very informal mollusk census on a small island in Moriches Bay off the south shore of Long Island, New York. In mid-August of each year, my husband Ernie and I have gone to Bird Island on a field trip sponsored jointly by the Queens County Bird Club and the Lyman Langdon Audubon Society.

The first visit in 1970 was a delightful adventure. We arrived in the early morning at the Hi-Way Marina at the foot of Atlantic Avenue in East Moriches. The group assembled laden with lunches, cold drinks, binoculars, bird-spotting scopes, suntan lotion, insect repellent, (I, of course, had my shelling equipment.) A motorboat pulled our string of attached rowboats across the bay and, after a fifteen minute 'cruise', the boats were beached on the island. We were left to remain until the appointed pick-up time of 2 P. M. The island is about 1-1/2 miles in circumference and it was man-made from accumulated dredgings. It has grasses, but no trees and there are no buildings or facilities of any kind!

The day had been chosen for a late-morning low tide so the shore birds could be seen to best advantage. This, as we shellers know, also shows the mollusks to best advantage. The east side of the island has a tremendous sand flat that is exposed at low tide and there is a smaller tidal flat at the western end. Shelling must be done before and during low tide or very little will be found.

As soon as we landed, everyone else went birding and my shell-hunt began. At any new shore, I start by picking up one of each shell species that I see, a single valve or even a fragment, until a better specimen comes along. Even though I may not want these for my collection, it is a way of seeing which mollusks exist in the area. The quality was not excellent in many cases and there were few live species, but by the end of my time on the sand flats, at the shoreline and drift-line (no snorkeling), I had a significant number of the marine shells

that can be collected in the New York area. The best shells of the day were *Solemya velum* (live) and live *Tellina agilis* -- many a beautiful pink.

The following year, on August 14, 1971, I collected 17 gastropods and 20 bivalves, a smaller total than in 1970.

The trip to Bird Island on August 19, 1972, included shellers Marian Hubbard, Monique Caubere, and Mike Werner. We explored only the south half of the island, and by 2 P.M., 44 species were taken -- 23 gastropods and 21 bivalves. Species found in 1972 that had not been collected in 1970 or 1971 were *Crepidula plana*, *Melampus bidentatus*, *Rictaxis punctostriatus* and *Noetia ponderosa*. The *Noetia* was found by a member of the bird club.) Marian and Mike each collected one *Solemya velum* -- Marian's was found inside a large *Ensis directus*. A large colony of live bubble shells (*Haminoea solitaria*) was discovered by Mike on the south-eastern flat.

Following is a list of species collected. (In addition, there are many small shells which will require further study for identification.)

(L) = Live on one or more collecting trips;
(RD) = Recently dead;
(SV) = Single valve.

August 19, 1972

GASTROPODS

Polinices heros Say (L)
Polinices duplicatus Say (L)
Crepidula fornicata Linne (L)
Crepidula plana Say
Crepidula convexa Say
Littorina littorea Linne (L)
Lacuna vincta Turton
Urosalpinx cinerea Say (L?)
Eupleura caudata Say
Mitrella lunata Say
Ilyanassa obsoleta Say (L)
Nassarius trivittatus Say
Buccinum undatum Linne
Busycon canaliculatum Linne
Busycon carica Gmelin
Haminoea solitaria Say (L)
Melampus bidentatus Say
Bittium alternatum Say
Turbonilla (interrupta Totten?)
Hydrobia totteni Morrison (L)
Hydrobia salsa Pilsbry
Retusa canaliculata Say
Rictaxis punctostriatus C.B.Adams
Cylichna oryza Totten 8/15/70

BIVALVES

Solemya velum Say (L)
Anadara ovalis Bruguiere (SV)
Anadara transversa Say (SV)
Noetia ponderosa Say (SV)
Crassostrea virginica Gmelin (SV)
Argopecten irradians Lamarck (SV)
Anomia simplex Orbigny (SV)
Mytilus edulis Linne (L)
Modiolus demissus Dillwyn (L?)
Laevicardium mortoni Conrad (L?)
Mercenaria mercenaria Linne (L)
Gemma gemma Totten (L)
Tellina agilis Stimpson (L)
Macoma balthica Linne
Tagelus plebeius Lightfoot (SV)
Ensis directus Conrad (RD)
Spisula solidissima Dillwyn (L)
Mulinia lateralis Say (SV)
Mesodesma arctatus Conrad (SV)
Mya arenaria Linne (L)
Petricola pholadiformis Lamarck (L)
Lyonsia hyalina Conrad (SV) 8/14/71
Zirfaea crispata Linne (SV) 8/15/70

This gives a count of 23 gastropods, 21 bivalves, for a total of 44 species (plus some not identified), an unusually large number for a single day's collecting.

Cherita Stark

READING SHELLS

by Dr. H. C. McMillin

Some years ago I was studying the razor clams of the west coast and was involved in the making of logical regulations for the legal control of the fishery. The biological basis of control is age of clams and the key to age determination is the growth rings of the shells. Near Kukak Bay (Alaska) I found the very beautiful tellin _T. lutea_, with all the bright sunrise and sunset colors on the inside of the shells. I saved a few specimens and studied them in relation to the age-growth studies I was making. Apparently some of them were very old. The winter marks were definite and consistent. If my readings were correct some of my specimens were 45, 46, and 47 years old.

One mark disturbed me. It appeared to be two winter rings close together, and could have been caused by an unusual climatic condition or a heavy storm locally. Counting back from the edge I concluded that the evidence indicated the year 1912, and the time as being in the spring about the time the clam started to grow.

I then dug a large number of specimens of all ages. On each shell I found what I came to call "the 1912 mark". Shells which were not old enough to go back to 1912 had no double rings. Therefore, the cause must have been something that happened only once in the last 47 years.

After some time I asked an old-timer in the community what had happened in the spring of 1912. Immediately he began to tell me of the Katmai eruption in April 1912.· At night a great volcano stood in the local mountain chain. In the morning the entire mountain had been blown away and only a big hole remained at the spot. Ashes fell on the roofs of Kodiak, 80 or more miles away, and crushed them. All summer the water for miles around was covered with ash and pumice. Nothing grew normally; not only the shells, but the trees were also marked.

I then had no doubt that the annual ring method of age determination was sound. People that claimed the ages could not be determined accurately from shells had only failed to learn to read ....

From: PACIFIC NORTHWEST SHELL NEWS, Vol II, No. 2, March, 1962.

NOTE: Any of our members who wish to purchase the book by Feininger and Emerson (see enclosed flyer) will get a 25% discount if they send the order to our corresponding secretary. If 50 of our members wish to buy the book, the discount will be 40%. There will be a small added shipping charge if the book is to be delivered by mail.

Do not send us money now; we will compile the orders and see what discount we can obtain, based upon the number of orders received.

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NEW YORK SHELL CLUB NOTES No. 186 November 1972 Page 1

The NEW YORK SHELL CLUB meets on the second Sunday of each month, September through June, in

ROOM 319, AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: SUNDAY, DECEMBER 10, 1972, at 2:00 P.M.

PROGRAM: Our guest speaker will be Dr. Ruth Turner, of the Museum of Comparative Zoology, Harvard, who will speak on: DEEP SEA MOLLUSKS, AND ADVENTURES WITH THE DEEP SUBMERSIBLE ALVIN

SHELL-OF-THE-MONTH

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Polinices duplicatus Say
  Part I - Notes on its name — Morris K. Jacobson — p. 6 & 7

ARTICLE OF THE MONTH

In an article entitled "Organismos Perforantes de las Costas Argentinas," Bastida, R. and M. R. Torti show that the ecological conditions both in nature and in aquaria are satisfactory for the life of *Lyrodus pedicellatus* Quatrefages. This Brasillian form of Teredinid, boring mollusk, is reported from Argentina for the first time and a key to the South American Teredinidae is included in Physis *31*: 39-50, 1972.

Henry D. Russell

CALIFORNIA RESTRICTS SEA LIFE COLLECTORS

Sacramento, California -- Biology students and other persons are banned from stalking starfish, anemones, snails, and seaweeds in tidal pools along California's 1,200 mile coastline under new state rules. The fine is $500 or a 6-month jail term. The regulations were adopted "in face of the increasing threat posed by tourists and students particularly who swarm over the beaches by the thousands collecting everything in sight," the State Fish and Game Commission says.

from THE EVENING BULLETIN

THE SHELL SHOW OF THE NEW YORK SHELL CLUB

The New York Shell Club will hold a shell show at the Bergen Community Museum of Arts and Sciences, at Farview and Ridgewood Avenues, Paramus, New Jersey from April 22-28, 1973. In addition to a display of shells, the Bergen County Museum also requests that we plan talks and slide programs to be included in their regular monthly programs and announced in their bulletin.

Club members who are interested in participating are requested to communicate with our corresponding secretary, Dorothy Germer, at her home by mail or phone (201-843-8215). So far 24 members have indicated that they are interested.

Sol Weiss, who is a cabinet maker, has offered to make display cases in sizes 18" x 36", 18" x 18", and 18" x 9", provided with hinged tops and lucite instead of glass. The cost will depend on how many are ordered. The Club will have to rent tables to put the display cases on.

Provision has also been made for a sales table where shells donated by members will be sold, one-third of the proceeds to go to the Museum. There will be no charge for the rent of the display room.

The Museum cannot provide insurance to cover any of us in case of loss. However, there is guard service during the day and evening.

COMMITTEE: Dorothy Germer, Alice Barlow, Bill Old, Helene Avellanett,
Sol Weiss, Ethelyn Woodlock.

FROM THE MINUTES OF THE OCTOBER MEETING

Dorothy Germer, chairman of the Exhibit Committee appointed to prepare for the forthcoming exhibit by the Club, to be held in the Bergen County (N. J.) Museum of Art and Science, reported on decisions her committee had made at its first meeting.

George Raeihle played a tape recording of the audio segment of a Channel 11 TV news report on the American Museum's new, permanent exhibit of shells of New York State. Bill Old spoke for the Museum.

Cecelia von der Heyden reported that she was exhibiting 250 shells at the Suffolk County (L.I.) Community College library, at Selden. She also reported that a political group is attempting to make Gardiner's Island a public area. Since it is still in its natural state, she suggested that members write to their congressmen, opposing the plan.

The Shell-of-the-Month, shown by Nick Katsaras, was a specimen of the beautiful Murex burnetti Adams & Reeve, from Korea. Along with the burnetti he showed examples of two other winged species - foliata and acanthopterus.

George Raeihle showed slides made on the 1956 field trip to Ward's Point, Staten Island. President Dorothy Raeihle pointed out familiar faces, flanks and fannies as they were identified. The find of the day was *Epitonium rupicola*, and George included close-ups of both cleaned shells and live specimens exploring one of Dorothy's aquaria.

The suggestion was made that we organize a trip to the Delaware Museum of Natural History. A number of members expressed interest, and it was decided to plan such a trip for next May.

A presentation on fossil collecting included slides of collecting areas in Virginia and Florida, and a display of fine specimens that members had found in these localities. Frank Nelson recommended the vicinity of Lake Waccamaw, North and South Carolina, as a good collecting site. Erosion of the surface obligingly uncovers more specimens constantly, these being Pliocene and Pleistocene marine shells. The lake, he added, is a good naiad habitat.

SEARCH AND SEIZURE

by Constance Boone

Helping to plan and lead, with Dr. Harold Murray of Trinity University at San Antonio, the fresh water and land field trip for the American Malacological Union Meeting in Galveston in July was a marvelous adventure for me.

Twenty-one professionals and amateurs (including some real novices at this kind of collecting) left the Galvez Hotel July 14 and headed west along Highway 6 for a site on private properties in Fort Bend County (permission to do such collecting is a must in Texas.) Here, at a deliberately contrived joining of Oyster Creek and Flat Bend Creek, which both eventually drain into the Brazos River, we trudged through cow tracks and muddy, weedy trails (it had been showering daily) for places to "jump in" and start digging. The water was reddish and muddy, from one to four feet deep in both streams, and the bottom was soft mud. For some of the visitors it was a first time to realize that you simply had to grope for Unios because there was not the slightest hope of seeing them!

There was an abundance of large three-ridged mussels, heavy and globose and real bucket fillers! Most collectors had one bucket and began to empty little piles of mussels along the bank as the progressed south in the stream. These were retrieved later. The beginner had no problem finding the shells and learned very quickly to dig live specimens from the mud and low banks. The professionals were generous in pointing out the preferred habitats for the different species. Among the "islands" of plant growth, other species and Sphaeriidae could be collected or sieved. For me, sharing a mud hole (and trying to soak up knowledge) with fellows like Dr. J. P. E. Morrison of the Smithsonian, Dr. William J. Clench of Harvard fame, Dr. D. H. Stansbery of Ohio State and Dr. Murray will go in a special memory niche.

The Naiads I know were collected here are as follows:
(Nomenclature is the way I heard it from professionals. You will note several viewpoints made in the field. I make no attempt to settle the specific name at this time.)

1.) Quadrula quadrula (Rafinesque 1820) the complex includes Quadrula apiculata apiculata (Say 1829) and mention that day was made of a form called Quadrula aspera (Lea 1831).

2.) Lampsilis anodontoides anodontoides (Lea 1831) or Lampsilis anodontoides fallaciosa (Smith 1869)

3.) Toxolasma texasensis (Lea 1857) = Carunculina texasensis in old literature.

4.) Anodonta imbecillis Say 1829

5.) Anodonta grandis Say 1829

6.) Cyrtonaias grandensis (Conrad 1855) -- A genus undergoing special study at this time by a trio of professionals and known by many names in literature stemming from Lampsilis tampicoensis (Lea 1838).

7.) Amblema plicata (Say 1817)
(Also mentioned as the form plicata peruviana or form perplicata)

8.) Leptodea fragilis (Rafinesque 1820)

9.) Arcidens confragosus (Say 1829)

From this collection site the seven cars followed the leader through Houston's freeways (because of a detour off Hwy 6 for a rest stop) to the Barker overflow of Addicks Dam some 17 miles west of Houston. Some very unusual circumstances for the acquisition of specimens here made this a once in a lifetime event! Through the cooperation of the U. S. Army Corps of Engineers, the overflow at the dam was cut off for one hour so that collecting could be made easier. Everyone was already down the steep cemented slope and in Buffalo Bayou below the dam and attempting to collect in the swiftly flowing water when the outlet was closed. In a matter of minutes things changed. As the water decreased to pools held by sediment and rocks on the cemented bayou floor, fish up to 15 to 20 inches (catfish, bass, carp, etc.) flopped around in dismay. This is a favorite haunt of fishermen who know fish abound in the pool below the dam. The highly oxygenated water here helps fish and food for them to thrive. Some of the fishermen standing on the bank that day gaped in awe at the ready made feast of fish and ran down to catch the fish with hands and nets.

In addition to the fish in full view, Unios began to be easily visible. Big red crayfish popped out of holes and were snatched by some of the museum workers. The succulent creatures were destined to ride home in alcohol for future studies. It was a wildly funny and productive time for all of us.

However, it was also a good lesson for me on just why this area has had a goodly population of Unionids. This is, after all, a part of Buffalo Bayou which becomes the Houston Ship Channel eventually and which has been much in our news on polluted streams that need to be cleaned.

Here the flow of water provides good oxygen and fish seek this area. Since Unionids have a growth cycle during which the young glochidia (first stage young, newly hatched from eggs carried within the mussels) must find certain fish to attach to for the next phase of life before dropping to the stream floor to grow as mussels, this area then is a likely site for this to happen. It takes some years for a mussel to grow to any size, and while some of the mussels probably do come over the dam with flood waters, conditions for the proper cycle of growth here on this cemented floor are good. Sediment forms around rocks that come over the dam, and sediment and plants establish holdfasts for the Unios around the cement block walls.

Reports to me of what was collected here may not be complete as I did not see every mussel. It is my understanding that all species found at Site 1 were represented at Site 2 although some of the mussels may be different subspecific forms.

Additional species collected here not found at Site 1 include the following:

Quadrula mortoni (Conrad 1836) in the pustulosa complex

Megalonaias gigantea (Barnes 1823)

Glebula rotundata (Lamarck 1819)

Uniomerus tetralasmus (Say 1830) or declivis form (Say 1831)

A jaunt down Bear Creek fields along the Bayou east of Hwy 6 for the diehards still going after the Bayou invasion was productive for a few land and fresh water gastropods. Of note, we mention the recovery of live Succinea luteola Gould on a tree and the collection of estivating Viviparus intertextus (Say 1829) from a dry, leafy bog. This may be the most western locality for this last named species.

Casualties of this all-day, somewhat arduous journey consisted of bruises, cut fingers, lost tennis shoes in the mud, one painful sting or bite by some critter falling from a tree, one skinned knee from a fall on the cement slope, some ruined hairdos from the sudden shower, poison ivy, and a frightened encounter with a copperhead under a log. We didn't see the alligators known to be in the general area of Oyster Creek we visited, but I can assure you that they were near there, fourteen in one batch known to the owner of that land. Just two weeks before this trip, a TV view from the bridge over Oyster Creek at Hwy 6 showed one adult alligator among the lily pads.

FROM: TEXAS CONCHOLOGIST - HOUSTON CONCHOLOGICAL SOCIETY Vol. 9, No. 1

"At the mouth of this shell is the God of the Moon ... In this chank is the chief of the Brahmans. This is why we worship the sacred chank. Glory to thee, sacred shell, blessed by all the gods, born in the sea, and formerly held by Vishnu in his hand. We adore the sacred chank and meditate upon it. May we be filled with joy! --- (Excerpt from the daily Brahman liturgy.)

OBSERVATIONS ON THE SHARK EYE OR CALLUSED MOON SNAIL POLINICES DUPLICATUS SAY

I. Notes on its name.

Morris K. Jacobson

In this and several succeeding numbers of these NOTES, the author proposes to give the results of certain observations he made upon this common marine gastropod. It might be best to begin with a short description of the species.

The shell reaches a diameter of about 2-1/2 inches and a height of 2 inches. It is generally depressed globular in shape, though some specimens -- the male shells, as we shall see later -- have a pyramid-like spire. There are about 7 whorls, the last one by far being the largest. This body whorl is not swollen as in the Hero Moon Snail, Polinices heros, but descends flatly and obliquely from the spire. The umbilicus is almost, but never entirely closed by a tongue-like brown or purplish callus. In color the shell is ashen brown with large lighter colored areas, occasionally a black region is seen near the spire. The lip is thin and sharp and the inside of the halfmoon-shaped aperture smooth and polished. The operculum is ear-shaped, thin, and horny in texture and color. This is a sand loving species more common in the New York area on ocean beaches than in the bays.

The Shark Eye is one of the three more commonly found naticids in the northeastern states, the others being the Hero Moon Snail (Polinices -- or Lunatia -- heros Say) and the three-lined moon snail (Polinices triseriatus Say). (*) (See Jacobson & Emerson, 1971:46-48). It differs from the latter two in the presence of the umbilical callus, heros and triseriata having the umbilicus largely open. The species ranges from Cape Cod to Florida and the Gulf states. As a fossil it is found from the Chesapeake Miocene into the later Pliocene and Pleistocene. In other words the species has been around for about 25 million years, give or take a few million, much longer than man or shell collectors.

The Shark Eye or Callused Moon Snail is a member of the world-wide family Naticidae, also called the Sand Collar Snails. Polinices (or better Polynices) was the son of Oedipus and Jocasta in Greek mythology. The name derives from Greek polys and nice meaning many victories, "a good name," as Poirier (1954:57) writes, "for a shell which attacks others in search for its food." Montfort, who gave the name to the genus in 1810, misspelled it Polinices and under the International Rules of Nomenclature (Art. 32 (a)) that is what it has to remain, error and all. The word duplicatus means, of course, doubled, a reference probably, as Poirier (l.c.) points out, to the fact that the great amount of callus makes it remarkably heavy." However, I don't think it is the callus that makes the shell, especially the presumably male shell, so heavy. It is an accumulation of calcium in the upper whorls of the shell. The family name Naticidae comes

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(*) Complete references will appear with the last article in this series.

from the Latin word for buttock or rump, but Fretter and Graham (1962:574) citing Jeffrey, 1867, say that it is supposed to be derived from the "natatory habit of the mollusc." The European species Polinices josephinius Risso does swim "by the undulatory movements of the foot." I have not read of this type of behavior on the part of the naticids of the western Atlantic. But Dr. Clench wrote me that he and Dr. Turner had indeed seen such behavior in a small P. duplicatus at Sanibel, Florida in 1953. He wrote: "The specimen was about 3/4 inch in length, the animal ± 3 in. x 2 in. and was swimming in an undulatory motion in water about a foot in depth. Not knowing what it was, I struck it and it dropped to the sand and contracted, showing its shell." At any rate, it is fairly certain that it was not the natatory habits of the mollusks which suggested the name. Jeffry's etymology seems to me to be fanciful; possibly he wanted to avoid any suggestion of indecency.

There are a few interesting comments to make on the history of the name Natica. It was revived in modern times by the French pre-Linnaean author, Michel Adanson in 1757, one year before the science of nomenclature was established by Linnaeus. Adanson pointed out that the ancients had given this name to a Nerita-like species. Although Adanson clearly showed how Natica differs from Nerita, Linnaeus in the following year made no use of this and placed all the Moon Snails in the genus Nerita together with such shells as the Bleeding Tooth, Nerita peloronta. He called them neritae umbilcatae, umbilicated nerites. It was not until 1777 that Scopoli validly introduced the name which had been revived by Adanson in 1757, followed by Bruguiere in 1789 and most others since. Even then, Wood and others in England still used Nerita in the inclusive sense at least as late as 1825. It is hard to say whether this resulted from English exclusiveness or the interruption of contact between the two nations as the result of the Napoleonic wars.

It is worthy of note that the genus Polinices is gratifyingly free of synonyms, the only one being the spelling Polynices used by Herrmannsen in 1847. The only synonym of Natica is Cochlis Röding introduced 21 years after Scolopoli had used Natica. Even duplicatus underwent very little renaming: Conrad gave the name Natica emmonsii to a very distinct female shell and he called a very pronounced male shell Natica densata. (The subject of male and female shells -- secondary sexual dimorphism will be discussed in a later study in this series.) Gabb found a specimen which had lost its callus accidentally and confused it with a Baby Ear Shell, of the genus Sinum. He named it Sigaretus numismalis because Sigaretus was a former name for the Baby Ear Shells (Dall, 1898). Of course, none of these names are valid since they all were given after duplicatus and they all refer to different forms of the same species.

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The NEW YORK SHELL CLUB meets on the second Sunday of each month, September through June, in

ROOM 319, AMERICAN MUSEUM OF NATURAL HISTORY

NEXT MEETING: SUNDAY, JANUARY 14, 1973, at 2:00 P.M.

PROGRAM: NOTES ON POLINICES DUPLICATUS SAY - Karl Jacobson

PLANNING OF THE SHELL SHOW

SHELL-OF-THE-MONTH

(Rest of Program to be announced)

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ARTICLE OF THE MONTH

An interesting article by Chernin E. in Journ. Parasit. 58: 209 indicates that snail-conditioned water stimulates the miracidia, or penetrating forms of *Schistosoma mansoni* to attack and attempt to penetrate certain substances. The stimulus is nonspecific in that it emanates from *S. mansoni* - susceptible and insusceptible snails and the substrates attacked are non-specific in that they can derive from host or nonhost snails. The article is entitled "Penetrative Activity of *Schistosoma mansoni* Miracidia Stimulated by Exposure to Snail-conditioned Water."

Henry D. Russel

"Mourn not, that Nature transitory is,

In all her fairest, all her loveliest things!"

(SEASON'S GREETINGS FROM THE EDITORS!)

****

FROM THE MINUTES OF THE NOVEMBER MEETING

The Shell-of-the-Month, as presented by Bill Old, was Conus bengalensis. Displaying a beautiful specimen, Bill remarked that this Andaman Sea cone was unknown ten years ago, and when first studied was thought to be a deep-water form of gloria-maris. An early specimen was sold in London for 1,350 Pounds, but at Nick Katsaras' October 1972 auction, an attractive one went for $160. (Might one say, "Sic transit gloria-maris - only more so"?) Showing slides of bengalensis, gloria-maris and milne-edwardsi, Bill described their points of resemblance and distinction.

Only minutes before, new member Carl Ehrlich had created considerable stir by displaying a magnificent, 5-3/4 inch gloria-maris!

The subject of the main presentation, by Mathilde Weingartner, was "Wayward Beaches and Wandering Dunes." With words and pictures, Miss Weingartner explained how normal shore currents and storm waves go about their constant work of building, carving and removing beaches. She noted that beach sand originates as rocks that are brought, by erosion and glacier movement, to ocean shores where wave action eventually makes little ones out of the big ones. Since the original materials vary considerably, so do the sands that derive from them. Mathilde demonstrated this by means of a bottle containing several layers of sand from as many Staten Island beaches. The colors ranged from tan to black.

Mart Hulswit, who conducted the meeting in the absence of the president and vice president, who were both vacationing, then read a "scientific" paper which not only reported the discovery of molluscs on the moon, but presented an interpretation of a lengthy conversation among them concerning visiting astronauts. The interpretation was explained as an accomplishment of advanced computer technology. The honor of being present at the first announcement of malacological history was not to be ours, however. Mart closed by identifying the "selenomollusks" as figments of the fleet and agile imagination of Karl Jacobson. So, we had only the laughs to savor, but there were more than enough of them to mollify even the most pedantic molluscophile. (MALACOZOOANATOCONCHOPHYSIOHISTOLORADULOCHROMOSOMOLOGIST?!)

In the final presentation, Bill Old recounted some pleasant experiences as a judge at the 1972 show of the Tidewater Shell and Fossil Club, of Virginia Beach, Va. He then showed slides, made by George Stephens of the TSFC, of the excellent exhibits.

The earliest English reference to snails is from about 725 AD when the Latin word Cocleae was translated in a glossary of that year as "lytle snezlas." Another glossary of the year 1000 translated Limax as "snaezl."

MKJ

TROPICAL STORM AGNES

Robert L. Lippson
Middle Atlantic Coastal Fisheries Center
Oxford, Maryland 21654

Chesapeake Bay was struck a severe and lasting blow by tropical storm Agnes on June 22, 1972. The Oxford Laboratory's anemometer dramatically recorded the initial onslaught of the storm as it passed through the area. Wind velocities changed abruptly from gentle 10 mph breezes to 50 mph gusts. The heavy rains, which accompanied the wind, released a torrent of freshwater which caused record quantities of sediments, debris, chemicals, and raw sewage to flow into Chesapeake Bay and its tidal tributaries. Freshwater surged into the Bay and drastically reduced the salinity and oxygen of the Bay water and its major sub-estuaries such as the Potomac River.

The depressed salinity and oxygen levels caused noticeable mortalities of clams and oysters. The data show that approximately 90% of the Potomac's commercial oyster stocks were destroyed. The Rappahannock, also suffered extensive losses. It is still too early to predict the fate of larval oysters, which were spawned during July, but the consensus is that significant losses will be sustained in Virginia. Commercial stocks of soft clams throughout Chesapeake Bay have also suffered serious destruction. As of this writing, (in mid-October) the only hope for the future of the soft clam fishery lies in small numbers of juvenile clams in Maryland waters which may provide the reproductive nucleus for succeeding generations. It will be several months before biologists will be able to assess the full damage to other species which may have been affected, such as the blue crab and important finfish.

Oxford Laboratory biologists are working closely with other State, Federal, and private agencies to survey and assess the damage wrought to fishery stocks and the general ecology of the Bay. All available manpower and equipment have been mobilized by this Laboratory and other laboratories in a massive, concerted effort to determine the extent of the damage. The National Marine Fisheries Service dispatched ocean-going vessels to an area off the mouth of Chesapeake Bay where they made a series of hydrographic measurements. Hydrographic analyses revealed that freshwater run-off from Chesapeake Bay had an effect on the ocean's salinity 3 miles offshore.

Oxford Laboratory biologists have intensified their activities in three major Eastern Shore rivers -- the Wicomico, Choptank, and Miles. Valuable information is being obtained on the condition of soft clams, oysters, finfish, and water quality. These data will be sent to a central clearing office where incoming data from other laboratories will be analyzed to obtain a meaningful picture of the current condition of Chesapeake Bay.

The initial objective of Bay scientists is to assess the immediate and long-term effects of tropical storm Agnes on the fishery stocks, environment, and resources of Chesapeake Bay. Some of the long-term

effects which will be studied after conditions stabilize will be changes in bottom topography and shoreline, relocation and fate of materials, including contaminants in water and sediments, and alteration in abundance and types of bottom organisms.

The various State and Federal agencies are already planning remedial measures to speed the recovery of the fishing industry. As information is gathered, processed, and reported on the full impact of Agnes, it will be utilized to determine what steps need to be taken to alleviate the economic and biological hardships which have descended upon Chesapeake Bay, its watermen, processors, and seafood lovers.

RESEARCH DEFINITIONS

The following phrases, frequently found in technical writings are defined here for your edification and enlightenment. This list was plagarized from some unknown genius who evidently had read one too many scientific papers.

"IT HAS LONG BEEN KNOWN" I haven't bothered to look up the original reference.

"OF GREAT THEORETICAL AND PRACTICAL IMPORTANCE" Interesting to me.

"WHILE IT HAS NOT BEEN POSSIBLE TO PROVIDE DEFINITE ANSWERS TO THESE QUESTIONS" The experiment didn't work out, but I figured I could get publicity out of it.

"EXTREMELY HIGH PURITY, SUPERPURITY" Composition unknown, except for the exaggerated claims of the supplier.

"THREE OF THE SAMPLES WERE CHOSEN FOR DETAILED STUDY" The results of the others didn't make sense and were ignored.

"ACCIDENTLY STAINED DURING MOUNTING" Accidently dropped on the floor.

"HANDLED WITH EXTREME CARE DURING THE EXPERIMENTS" Not dropped on the floor.

"TYPICAL RESULTS ARE SHOWN" The best results are shown.

"PRESUMABLY AT LONGER TIMES" I didn't take the time to find out.

"THESE RESULTS WILL BE PUBLISHED AT A LATER DATE" I might get around to it sometime.

"IT IS BELIEVED THAT" I think.

"IT IS GENERALLY BELIEVED THAT" A couple of guys think so too.

"IT MIGHT BE ARGUED THAT" I have a good answer for this objection that I shall raise now.

"IT IS CLEAR THAT MUCH ADDITIONAL WORK WILL BE REQUIRED BEFORE A COMPLETE UNDERSTANDING" I don't understand it.

"CORRECT WITHIN THE ORDER OF MAGNITUDE" Wrong.

"IT IS TO BE HOPED THAT THIS WORK WILL STIMULATE FURTHER WORK IN THE FIELD" This paper is not very good, but neither are any of the others on this miserable subject.

"THANKS ARE DUE TO JOE GLOTZ FOR ASSISTANCE WITH THE EXPERIMENT AND TO JOHN DOE FOR THE VALUABLE DISCUSSIONS" Glotz did the work and Doe **explained** what it meant to me.

Submitted by William E. Old

OBSERVATIONS ON POLINICES DUPLICATUS SAY

II. The callus.

Morris K. Jacobson

The basal callus is the most interesting part of P. duplicatus. This is the heavy, tongue-shaped structure which in some specimens almost entirely fills the umbilicus, and in others leaves smaller or larger areas open.

It sets the species off immediately from the 2 commoner other species found locally: Lunatia heros and triseriata, but not from Natica pusilla, a tiny species not easily confused with duplicatus. We will have more to say about the callus and the role it played in the subgenera in a later note in this series.

The color of the callus is usually purplish brown in living or recently dead specimens. But in the cabinet the color fades to a light chocolate brown, the color usually given in shell books. (Rogers, 1908:145, Morris, 1951:134, Abbott, 1954:186). In 1958 Harry J. Turner at Duxbury, Massachusetts, made the interesting discovery that P. duplicatus which feed copiously on soft shell clams (Mya arenaria Linneaus) change the color of the callus from brown to "pearly white with pink margins at the line of contact with the main bodies of the shells" (1958:1). Those which are poorly nourished, as at Barnstable, Massachusetts, where there is a scarcity of suitable food, had "brown" calluses. The P. duplicatus in Rockaway Beach, to judge from the vast number of drilled shells have, an ample supply of Surf Clams (Spisula solidissima Dillwyn) available, a food supply they have to share with the Hero Moon Snail. Nevertheless the callus, except in faded beach specimens, is brown or purplish brown.

Actually the callus did not "turn" white. In Rockaway Beach I frequently find shells with the callus clearly showing two or more layers of shell material, some dark, some light. Hence probably Turner's snails merely laid a deposit of light colored matter over the callus during a period of variable diet, and thus the callus "turned" white. The same snails also were able to advance the leading edge of the lower whorl slightly more than 180 degrees, showing that growth of the entire animal had taken place, and that thus a new layer of shell material had been deposited on the callus. Naturally the control snails, which had been deprived of food for the 35 days of the experiment, did not increase the size of the shell and thus the color of the callus did not change.

The callus is present not only in mature or near mature individuals, but appears also in specimens only 3 to 5 mm in width, and the remark by Andrews (1971:101) that the "tiny" individual "has an open umbilicus" is not correct.

The degree to which the callus fills the umbilicus varies greatly and has led, as will be seen later, to some confusion in the assignment of subgenera. It has also led to the naming of at least two subspecies, percallosa Conrad, where the umbilicus is completely filled, and campeachiensis Reeve which has a wide umbilicus with a relatively small amount of callus. These names are useless because, as Dall pointed out (1892:369), "all gradations (are) observable in a collection of specimens covering a sufficiently wide geographical rang." It needs only be added that such a gradation is demonstrable in the population at Rockaway Beach and that no large geographic sampling is necessary.

The question arises: how is this ambivalent condition maintained at all stages of the shell growth from infancy to maturity? Chances are that it represents a varying ontological stage in the animal's development. In all likelihood, the outer shell lip is advanced comparatively rapidly, more rapidly than the callus can be laid down. Thus, as the lip advances in a curved direction, an umbilical opening or chink is formed where the callus has not yet reached, and the original callus remains perched for a time at one side, the "campeachinensis" stage. Now the heavier callus is laid down and the newly formed umbilical chink is filled and the "percallosa" stage has been reached. This process is repeated and the relationship of callus and umbilicus varies. If this is indeed true, then the part of the mantle edge which lays down the callus differs from the rest of the organ. I have found no data on this in the literature.

REVIEW .... S. Peter Dance's "SEASHELLS" Hamlyn all-colour paperbacks, London, Hamlyn Limited Publishing Group, Ltd.'71 159 pages, many colored illustrations.

In the opinion of an amateur who has acquired a pretty fair knowledge of the popular books available to those interested in the field, this is probably the best inexpensive handbook available for a general guide to the Phylum and the art of collecting and trading. It offers a very quick way of falling in love with the hobby of collecting shells.

The author, who is by no means a newcomer to the field of Shells and all they entail -- "Shell Collecting, an Illustrated History", "Rare Shells", numerous scientific articles in worldwide journals, and several forthcoming books on the subject, has made available to the novice and to the serious amateur alike, a small handbook of great magnitude.

This volume affords the buyer the equivalent of the long-popular Golden Press "Sea Shells of the World", still indispensable, and found on the shelf of every professional's personal library, as well as in this volume's bibliography, but gives us quite a bit more besides. His introductory pages may seem a bit challenging in the use

technical definitions, but they soon become useful and helpful to the uninitiated. The history of Man's use of the Mollusks is stressed, as is his instinct to collect them as prized objects. Faunal areas are described, giving the beginner a good idea of their distribution. The reproductive cycles are also studied, with a healthy dose of embryology thrown in, an aspect that is often overlooked in books of this sort.

The illustrations by James Nicholls are immaculate, at least on a par with the best of their kind, and add the finishing touch to the text. Together, they comprise a popular handbook that leads the field in its genre, for the present.

Mart Hulswit

PRESERVING SHELLS

Information about preserving pen shells appeared in an article in the "Texas Conchologist" (Houston Conchology Society's publication) Sugust 1967 - written by Anne Speers.

To prevent drying and cracking, she suggests that freshly collected pen shells be soaked for two days or more in a solution of one part glycerine to two parts water, then dried carefully. She warns that this may darken the shell.

I have no idea whether this works, as I have never used the formula!

Marian Hubbard recently told me that Harold Feinberg uses equal parts of baby oil and glycerine, then adds double that quantity of alcohol for keeping periostracums - straca?! - soft and flexible.

Two days ago, I put my valve of Solemya borealis in a jar of Harold's brew and the perio already has become very pliable. Hopefully, keeping the valve submerged will prevent the shell from splitting further. Sorry I didn't do this earlier.

Cherita Stark

MOVIE CONCHOLOGY

In the film THE BIG CLOCK (1948) with Ray Milland, Charles Laughton, and Maureen O'Sullivan, Milland, a detective, says to Laughton (approximately): "You have to know a man thoroughly to trap him. I know one we were looking for once, a collector -- seashells -- specialized in Paleozoic bivalves. He had all the varieties except one -- and the only specimen of that one was in the St. Louis Museum. Well, you know collectors; if they want something badly enough they'd even steal it." Laughton: "I suppose so." Milland: Well, we set a policeman to watch that speciment and sure enough we caught our man.

mkj

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